



TETRA TECH EM INC.

I. 1

**Eagle Picher
Ohio, Michigan, and Illinois Properties
TDD: S05-0603-003**

Site Inspection Reports

***Galena, Illinois
Sidney, Ohio
Urbana, Ohio
Hillsdale, Michigan (2)
Inkster, Michigan
River Rouge, Michigan***

EPA Region 5 Records Ctr.



318179



TETRA TECH EM INC.

April 10, 2006,

Mr. Jon Gulch
On-Scene Coordinator
Emergency Response Branch 1
U.S. Environmental Protection Agency
9311 Groh Road
Grosse Ile, Michigan 48138

**Subject: Site Inspection Reports
Eagle Picher Ohio/Michigan/Illinois Properties
Technical Direction Document No. S05-0603-003
Tetra Tech Contract No. 68-W-00-129**

Dear Mr. Gulch,

The Tetra Tech EM Inc (Tetra Tech) Superfund Technical Assessment and Response Team (START) is submitting the enclosed site inspection reports for the Eagle Picher Holdings, Inc. (EP) properties located in Illinois, Ohio and Michigan.

EP is in the process of coming out of bankruptcy, and as part of the proceedings, they were required to set aside a dollar amount to address any environmental concerns at properties located across the country, nine of which are located in Region 5. The U.S. Department of Justice (DOJ) requested assistance from the U.S. EPA in determining if the dollar amount that was proposed by EP was sufficient for each property.

Jon Gulch, U.S. EPA On-Scene Coordinator (OSC) tasked Tetra Tech's START team under Technical Direction Document Number S05-0603-003, to assist with the project. Specifically, Tetra Tech was tasked to review all historical documents available for each site, perform a site visit at each property, document site conditions, and generate a Site Inspection Report summarizing the findings by March 24, 2006.

With the assistance of the OSC and the DOJ, Tetra Tech arranged for files to be reviewed and/or transferred from the U.S. EPA Records Center, the Ohio Environmental Protection Agency, the Michigan Department of Environmental Quality, the Illinois Environmental Protection Agency, and Eagle Picher Holdings, Inc. All historical documents were not received prior to the site visits; however they were reviewed and pertinent information was incorporated into the Site Inspection Reports.

Tetra Tech personnel visited the following EP properties:

- A property located on North Meridian Road in Galena, Illinois;
- A property located on Brooklyn Avenue in Sidney, Ohio;
- A property located on South Edgewood Avenue in Urbana, Ohio;
- 215 Industrial Drive, Hillsdale, Michigan;
- 221 Industrial Drive, Hillsdale, Michigan;
- 135 East South Street, Hillsdale, Michigan;
- 2424 John Daly Street, Inkster, Michigan;



TDD NO.: S05-0603-003 (Eagle Picher Ohio/Michigan/Illinois properties/cover letter)

- 2638 Princess Street, Inkster, Michigan; and
- A property located on West Pleasant Avenue in River Rouge, Michigan.

Tetra Tech performed the Galena, Illinois site visit on March 15, 2006; however, no U.S. EPA official attended this site visit. All other site visits were scheduled with the OSC for March 20 through 22, 2006. A Site Inspection Report was generated for the site visits and reviewed by the OSC prior to submission to the U.S. Department of Justice. Due to the strict deadline, Tetra Tech did not perform internal QA/QC review on all the documents. The OSC was aware of this and accepted the reports without the internal Tetra Tech reviews.

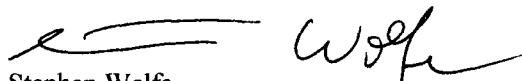
The reports for 215 and 221 Industrial Drive, Hillsdale, Michigan were combined into one report as the properties are located adjacent to each other and the dollar amount proposed by EP was a lump sum for the two properties. The reports for 2424 John Daly Street and 2638 Princess Street, Inkster, Michigan was combined into one report as the two properties are located on the same piece of land, the two addresses are for separate entrances (manufacturing division and sales division).

All reports were completed and available for download on March 24, 2006. At the request of the DOJ, Tetra Tech also shipped paper copies of the reports to the DOJ office.

The DOJ attorneys conducted a conference call after they reviewed the reports and requested that a more detailed cost analysis be provided. A Memorandum to the initial report was generated for each site report and delivered to the DOJ on March 29, 2006. The DOJ attorneys conducted an additional conference call and requested that we further refine the cost analysis and incorporate some additional historical information that was recently received. Four additional compact discs containing historical files were received on April 1, 2006 and the Cost Memorandum's were finalized on April 7, 2006 and delivered to the DOJ by electronic mail transmission.

If you have questions or comments regarding the reports or require additional copies, please contact me at (440) 234-0886 or Therese Gioia at (312) 201-7431.

Sincerely,



Stephen Wolfe
Tetra Tech START Project Manager

Enclosure

Galena, IL Site Inspection Report, and Cost Memorandum
Sidney, OH Site Inspection Report, and Cost Memorandum
Urbana, OH Site Inspection Report, and Cost Memorandum
Industrial Drive, Hillsdale, MI, Site Inspection Report, and Cost Memorandum
South Street, Hillsdale, MI, site Inspection Report, and Cost Memorandum
Inkster, MI Site Inspection Report, and Cost Memorandum
River Rouge, MI Site Inspection Report, and Cost Memorandum

cc: Lorraine Kosik, U.S. EPA START Project Officer
Therese Gioia, Tetra Tech START Program Manager





TETRA TECH EMI INC.

MEMORANDUM

To: Jon Gulch, U.S. EPA On-Scene Coordinator, Region 5, Grosse Ile, Michigan
From: Stephen Wolfe, Tetra Tech EMI START, Cleveland, Ohio
RE: TDD S05-0603-003 Eagle Picher Michigan, Ohio, and Illinois Properties----Supplemental Cost Information Estimate---Galena, Illinois property.
CC: Jason Barbeau and Elise Feldman (U.S. DOJ), Catherine Garypie (U.S. EPA), site files
Date: April 7, 2006

Dear Mr. Gulch,

A site investigation report was submitted for the above referenced project. After discussions with the U.S. Department of Justice, it was determined that a more extensive estimate of project cost structure would be needed for each property. This memorandum discusses the Galena, Illinois property only. Please note that all costs **are estimates only**. The following estimates and recommended actions were made based on all available site information and past experience with similar projects. A full Site Assessment conducted on the property may yield additional information that would increase or decrease these estimated costs.

At the time of the initial report (March 24, 2006), limited information was available, except observations from a site visit. Subsequent to the initial report, Eagle Picher Holdings, Inc., provided additional files concerning the property in question and that data was used to prepare this Memorandum. The final costs listed below are an updated estimate based on the site visit and all information provided by Eagle Picher Holdings, Inc. to date. Receipt of any additional information may affect the final estimate.

Minimum Recommended Actions

At this time, due to the lack of information concerning site conditions, the following actions should be taken, at a minimum, at the Galena, Illinois property:

- (1) A full site assessment should be conducted to clearly define site conditions and any potential environmental issues.
- (2) The entire property should be fenced to help eliminate any future dumping of material on the property.
- (3) Property maintenance should be maintained for a period of 20 years or until the State of Illinois is satisfied that no contamination is migrating off-site.
- (4) Yearly soil samples should be collected and analyzed for metals and TCLP metals in any areas where vegetation will not grow to check for leaching of any underlying contamination.
- (5) The mine shafts should be filled in with soil or other appropriate material to ensure that no one could fall in if the cement cover deteriorates.
- (6) All environmental issues discovered during the site assessment will need to be addressed.

Justifications for Recommended Work

- (1) The soil in the drainage pathway appears to be eroding as noted during the site visit.
- (2) During the 1999 STEP investigation conducted by the Illinois EPA, at least one soil sample was collected in the drainage pathway at the surface that had a high level of lead contamination (32,700 ppm).
- (3) Unusual swales in the ground surface were noted during the site visit. These swales could be attributed to burying material. The site contact could not rule out this possibility.

- (4) Pictures of the concrete pad prior to removal showed large cracks all over the surface. Any contamination placed on the pad could have easily reached the soil underneath.
- (5) According to the site contact, it was an on-going yearly process to try and have vegetative material take root in the drainage pathway. This may indicate metal contamination. If there is no yearly maintenance of the property after two years, the "cover" that was placed over contaminated soil could possibly further erode over time and the contaminated material could migrate off site.
- (6) Fencing of the property is required as evidenced by the drums "appearing" on site. The Illinois EPA representative (Bruce Evert) did not recall any drums being present on the property during the 1999 site investigation; therefore someone dumped these drums on the property between 1999 and 2006.

Site Assessment ^A			
GeoProbe	1 week	\$1,000/day	\$7,000
XRF	1 week	\$2,000	\$2,000
Soil Samples	2 (full scan)	\$1,500/each	\$3,000
	40 (metals only)	\$120/each	\$4,800
	10 (TCLP metals only)	\$180/each	\$1,800
Sediment Samples	20 metals only	\$120/each	\$2,400
Water Samples	10 metals only	\$120/each	\$1,200
GPR Survey			\$10,000
Labor and misc Equipment			\$17,500
Total for Site Assessment			\$49,700
Soil Removal HAZARDOUS Waste 12,000 square feet ^B			
Waste Disposal	1,000 yds ³	\$150/ yds ³	\$150,000
Labor and equipment			\$100,000
Backfill	1,000 yds ³	\$10/ yds ³	\$10,000
Set-up			\$10,000
Analytical costs			\$3,000
Drum Removal			\$1,000
Seeding			\$5,000
Maintenance	20 years		\$100,000
Filing in mine shafts			\$50,000
Contingency	20%		\$105,800
Total for soil removal as Hazardous waste (plus drum removal)			\$634,800
Soil Removal HAZARDOUS Waste remaining 8.75 acres ^C			
Waste Disposal	28,233 yds ³	\$150/ yds ³	\$4,235,000
Labor and equipment			\$2,000,000
Backfill	28,233 yds ³	\$10/ yds ³	\$282,330
Analytical costs			\$60,000
Seeding			\$50,000
Maintenance	20 years		\$300,000
Contingency	20%		\$1,385,466
Total for soil removal as Hazardous waste (remaining 8.75 acres)			\$8,312,796
Fence Installation ^D			
Total cost for fencing the entire property			\$100,000



- A** Site assessment would include using a Geoprobe to collect samples from about 100 locations on the property and scanning them with the XRF. ~40 soil samples would be sent for analytical confirmation and 10 for TCLP metals only. Two soil samples will be collected around the drums and run for full scan analysis to determine if any hazardous waste was originally in the drums and leaked out. Sediment samples and co-located water samples (if there is water in the drainage ditches) will be collected to include far enough upstream/downstream (full scan analysis). GPR survey to determine if there is any other buried drums/material on site. Analytical costs are based on laboratory published costs per sample per analysis. Labor and equipment costs are estimated based on current U.S. EPA contractor rates.
- B** Removal work. Total excavation is estimated to be 12,000 square feet (the size of the concrete pad plus drainage pathway) to a depth of 2 feet and disposed of as hazardous waste. Approximately 100 cubic yards of excavation is added in case the soil around the 10 drums needs to be excavated. This estimate assumes that: (1) a two foot excavation would be sufficient; and (2) no other contaminated area (buried material) is found on the property or in the sediments during the site assessment. Any additional depth will increase the final costs. Analytical costs based on laboratory published costs per sample per analysis. Labor and equipment costs are estimated based on current U.S. EPA contractor rates.
- C** Assumes the entire property must be excavated and disposed of as hazardous wastes to a depth of 2 feet. Reasons for this to happen include extremely high levels of metal contamination and/or the discovery of buried drums or other material. Analytical costs are based on laboratory published costs per sample per analysis. Labor and equipment costs are estimated based on current U.S. EPA contractor rates.
- D** Total length of fencing is assumed to be 2,500 linear feet (estimated outside border of property) fencing will consist of a 7 foot chainlink fence with 1 foot of barbwire and 1 large gate on North Meridian Road. Fencing costs were estimated by the foot based on similar EPA projects.





TETRA TECH EM INC.

March 24, 2006,

Mr. Jon Gulch
On-Scene Coordinator
Emergency Response Branch 1
U.S. Environmental Protection Agency
9311 Groh Road
Grosse Ile, Michigan 48138

Subject: Site Inspection Report
Eagle Picher Ohio/Michigan/Illinois Properties
North Meridian Road, Galena, Jo Daviess County, Illinois
Technical Direction Document No. S05-0603-003
Tetra Tech Contract No. 68-W-00-129

Dear Mr. Gulch:

The Tetra Tech EM Inc. (Tetra Tech) Superfund Technical Assessment and Response Team (START) is submitting the enclosed site inspection report for the Eagle Picher facility located in Galena, Illinois. If you have questions or comments regarding the report or require additional copies, please contact me at (440) 234-0886 or Therese Gioia at (312) 201-7431.

Sincerely,

Stephen Wolfe
Tetra Tech START Project Manager

Enclosure

cc: Lorraine Kosik, U.S. EPA START Project Officer
Therese Gioia, Tetra Tech START Program Manager

**SITE INSPECTION REPORT
EAGLE PICHER OHIO/MICHIGAN/ILLINOIS PROPERTIES
NORTH MERIDIAN ROAD
GALENA, JO DAVIESS COUNTY, ILLINOIS**

Prepared for

U.S. ENVIRONMENTAL PROTECTION AGENCY
Region 5 Emergency Response Branch 1
9311 Groh Road
Grosse Ile, MI 48138

TDD No.:	SO5-0603-003
Date Prepared:	March 24, 2006
Contract No.:	68-W-00-129
Prepared by:	Tetra Tech EM Inc.
Tetra Tech START Project Manager:	Stephen Wolfe
Telephone No.:	(440) 234-0886
U.S. EPA On-Scene Coordinator:	Jon Gulch
Telephone No.:	(734) 692-7686



TDD NO.: SO5-0603-003 (Eagle Picher Ohio/Michigan/Illinois properties/Galena, Illinois location)

1.0 INTRODUCTION

Tetra Tech EM Inc. (Tetra Tech) Superfund Technical Assessment and Response Team (START) prepared this site inspection report in accordance with the requirements of Technical Direction Document (TDD) Number S05-0603-003 issued by the U.S. Environmental Protection Agency (U.S. EPA). The scope of this TDD was to conduct site inspections at nine Eagle Picher properties located in Ohio, Michigan, and Illinois. Specifically, START was tasked to assist the OSC in determining if Custodial Trust Funds set aside by the property debtor (Eagle Picher Holdings, Inc.) would be sufficient based on the following: review of all site files available at the time of the inspection; review of any historical reports for each site; and visual assessment/documentation of current property conditions. In addition to the visual property assessment, an X-Ray fluorescent instrument (Innov-X-Systems) was available to test soils for metal contamination at the Ohio and Michigan sites only.

Access for the site inspections was arranged between Catherine Garypie (Office of Regional Council, U.S. EPA, Region 5), Elise Feldman and Jason Barbeau (U.S. Department of Justice, Environmental Enforcement Section), and Patrick Brooks (legal counsel for Eagle Picher Holdings, Inc.).

Jon Gulch, U.S. EPA Region 5 On-Scene Coordinator (OSC) and Stephen Wolfe with Tetra Tech START performed all site inspections for the properties located in Ohio and Michigan. Doug Rommeck (Manager-Health, Safety and Environment) was the Eagle Picher representative for the Ohio and Michigan sites. Ken Brown and Raquel Cramlet with Tetra Tech START performed the inspection at the Illinois property. Greg Stauder of Greg Stauder & Co. was the representative for Eagle Picher at the Galena, Illinois property. Due to the timing of the inspections, no U.S. EPA representative was available to attend the site inspection in Galena, Illinois.

This report specifically addresses the property located on North Meridian Road, in Galena, Illinois. Attachments to the report include a topographic map of the site location (Attachment A), an aerial photograph of the site location (Attachment B), select photographs taken during the site inspection (Attachment C) and an Illinois EPA CERCLA Site Team Evaluation Prioritization (STEP) Report ID # 980905202, September 1999 (Attachment D).

2.0 INITIAL BACKGROUND INFORMATION

The following site summary was compiled by Laura Ripley (Environmental Scientist, U.S. EPA Region 5).

The Galena property is a largely undeveloped 9 acre site located adjacent to the former primary mill/beneficiation property sold by the EP1 debtors (predecessor entities of the current Eagle Picher debtors, which were themselves the subject of earlier, separate Chapter 11 proceedings) in 1980. A portion of the property was used to store beneficiated lead ore until the late 1970's. Eagle Picher removed a former lead storage pad and remediated soils for lead and zinc to industrial levels. These remediation activities were completed in 1996 under the oversight of the Illinois EPA.

On September 30, 1999, the Illinois EPA completed an expanded site inspection at the Inspiration Mines located on North Meridian Road, CERCLIS ID# ILD980905202. This site poses a potential threat to human health and the environment. This site is on U.S. EPA's backlog of which U.S. EPA needs to determine the priority of the release. There was some groundwater contamination detected which may have been from the disposal of mine wastewater. In addition, there is also the presence of lead and zinc throughout the property and in nearby soils. U.S. EPA will be working with the Illinois EPA to determine this site's priority.

3.0 HISTORICAL FILE REVIEW

A CERCLA-STEP report (ID # 980905202, September, 1999) was available for review. This report covers investigations conducted on the Inspiration Mines property as well as the Eagle Picher property. The STEP report is summarized below.



The site was originally placed on the Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS) list on June 1, 1983, due to the following: potential presence of elevated quantities of lead in the adjacent creek; lead in off-site soils due to surface water run-off and wind-borne material originating from a 10-acre, 40-50 foot tall, tailings pile; and indications of groundwater contamination. Other concerns were that (1) waste material had the potential to migrate or may have already migrated into the Galena River, and (2) there was information regarding the property which indicated there were high levels of lead- and zinc-related material throughout the Inspiration Mines property.

In 1976, a nine acre portion of the property (which is the subject of this report) was sold to private individuals for the purpose of raising horses. In 1981, three horses died of lead poisoning. Soil samples collected by the Illinois EPA in 1981 revealed high levels of lead and zinc in soil near the 9,000 square foot concrete pad used to store high-grade ore. High levels of lead and zinc were also found in soil in surface water run-off routes, which contained lead as high as 29,375 parts per million (ppm) and zinc as high as 223,000 ppm. Eagle Picher re-purchased the property in 1984 as a result of a ruling of a law suit filed by the individuals raising horses.

Illinois EPA collected additional soil, sediment, and groundwater samples from the Inspiration Mines site and the Eagle Picher property in 1999. This investigation was conducted five years after removal of the concrete pad and covering of the contaminated soils in 1994. Analysis of these samples indicated high levels of lead and zinc throughout the soils on the property and in some of the sediment samples. Toxicity characteristic leaching procedure (TCLP) sample results indicated that soil on the site could be classified as a hazardous waste based on the lead and cadmium content. One residential well sample had a slightly elevated level of lead when compared to a background sample. In addition to analytical samples, an X-Ray Fluorescence (XRF) field instrument was used at two hundred locations on both the Inspiration Mines property and the Eagle Picher property. XRF analysis of sediments indicated high concentrations of zinc and lead at most locations with concentrations ranging from non-detect to 4,659 ppm zinc and non-detect to 2,593 ppm lead. XRF analysis of soil samples indicated high concentrations of zinc and lead with concentrations ranging from non-detect to 117,146 ppm zinc and non-detect to 19,200 ppm lead.

Specific references in the STEP report for samples associated with the 9-acre property include the following: (1) sample point (X111) defines the area for the runoff route from the former concrete pad (page 20) sample results indicate lead was present at 32,700 ppm (clean-up objective was 400 ppm in soil); and (2) Samples X201 and X202 were sediment samples collected in the tributary downstream of the runoff from the former storage pad area (page 21) sample results indicated that ecological screening benchmarks for sediments were exceeded for arsenic, cadmium, lead, manganese, nickel, silver, and zinc. In 1994, the area around the concrete pad was remediated, however, according to the STEP report; this work consisted of removing the concrete pad and placing clean topsoil over the contaminated area and in the drainage pathway.

After the START site visit, the Illinois EPA made available their site files pertaining to the Galena, Illinois site. Specific excerpts from the documentation include the following statements:

In a May 7, 1984 Illinois EPA "Potential Hazardous Waste Site Preliminary Assessment" form, completed by Mr. Robert Munger, the following information was observed during a site visit: (1) Approximately 10,000 cubic yards of heavy metal contaminated soil is present [lead above 26,000 ppm, zinc above 200,000 ppm]; (2) run-off from lead ore storage killed grass down slope; (3) lead ore stored on concrete slab with no measures to control run-off; (4) lead ore was stored in a manner that allowed discharge; and (5) population of approximately 4,432 people can be affected by the site.

In a 1989 Ecology and Environment (E&E) Field Investigative Team (FIT) Site Assessment report, the soil surrounding/beneath the concrete storage pad is described with the following observations: (1) The threat of exposure via direct contact with humans and domestic or wild animals is due to the presence of lead contaminated soils; (2) Lead still exists in the soil at concentrations greater than 20,000 ppm and the threat of exposure exists. In addition, the potential exists for lead contaminated soils to move from the site via the ephemeral stream. There



is also documentation of children playing on-site in the past. Because of the potential for lead to move off-site and documentation of site use by children, the remediation of the lead contaminated soils needs to be initiated through the appropriate agency(ies); and (3) Even though 10 years have passed since the horses died of lead poisoning, a serious direct contact threat exists.

Photos of the concrete slab were available in the 1989 Report and it appears that the majority of the slab contained large cracks. These cracks indicate that there was a potential for contamination to leach beneath the pad while it was used to stockpile lead ore.

A Final Remediation Work Plan was also available and it outlined that the activities to take place included the removal of the concrete pad, covering of the exposed soil with clean soil, installing silt fences, and covering the drainage pathway with clean soil. A letter from the Illinois EPA approving the final work plan specifically stated the following, "We understand that removal of the concrete pad and the material which has accumulated between the cracks does not constitute a complete removal of contaminated soil. The goal should be to cover any remaining contaminated material with clean soil to eliminate, or greatly reduce, contaminated surface water run-off." Based on observations at the time of the START site visit, the goals outlined by the Illinois EPA were not met (see below).

4.0 SITE OBSERVATIONS

On March 15, 2006, Tetra Tech personnel (Ken Brown and Raquel Cramlet) met Greg Stauder (Eagle Picher representative) at the property located on North Meridian Road in Galena, Illinois.

The site is approximately 9 acres in size; fencing exists on the frontage of the property only (North Meridian Road). An unnamed creek bed is located on the north side of the property which is a tributary to Milberg Creek, which eventually runs to the Mississippi River which is located within 10 miles.

During the property walkthrough, areas of bare ground were observed down gradient of the former concrete pad location. The bare ground was in the area of the 1994 remediation work (see Section 3.0). According to the STEP report, the remediation consisted of removing a concrete pad and covering the underlying soils with clean topsoil. Mr. Stauder indicated that approximately 1 foot of clean topsoil was placed in the area where the concrete pad was located and up to three feet of clean topsoil was placed to the northeast of the pad in the surface water drainage pathway. Mr. Stauder does not believe that any lead- or zinc-contaminated soil was removed from the site during the 1994 remediation activities. Based on manifests from the 1994 action (Mr. Stauder had available for review at the site), wastes landfilled during the remediation activities consisted mainly of lead-contaminated concrete.

Mr. Stauder indicated that the bare ground was due to the underlying zinc contamination leaching upward through the clean topsoil. The zinc binds with nutrients in fertilizer thereby making the nutrients unavailable for use by grass planted to stabilize the soil. Also noted in the walkthrough were uneven areas of terrain that Mr. Stauder said could be attributed to not properly grading the property during the 1994 action; however the possibility that the area was used to bury wastes could not be ruled out. Silt fences were installed in the surface water drainage pathway from the concrete pad storage area; however, portions of the fence were buried by soil. Since grass will not grow in this area, the soil becomes unstable and shifts with the slope of the land, covering part of the silt fences.

Ten empty steel drums were observed on the site. Mr. Stauder did not know where the drums originated from or what they previously contained. Mr. Stauder also stated that, in the past, there was a drum of liquid waste that contained lead at a high level that was removed from the property. The drum and its contents, as well as some of the surrounding soils, were shipped off site as hazardous waste due to the lead content.



In addition to the possible chemical contamination, several physical hazards were noted. There is an air shaft for the neighboring mine and a concrete pad is covering what could be a mine shaft. These coverings could be compromised in the future causing a hazard to trespassers and wildlife.

5.0 CONCLUSION

Eagle Picher Holdings, Inc. is proposing that a set aside of \$137,188 (over a period of two years) would be sufficient for property remediation.

Based on available information at the time of this report and the findings from previous site investigations, the funds proposed will not adequately address the environmental conditions present on site. Using costs from similar U.S. EPA Region 5 removal sites associated with Eagle Picher as a comparison tool, it is estimated that a range of \$1.5 to \$3 million would be required to address all environmental threats to human health and the environment posed by the property located in Galena, Illinois. These cost estimates are based on excavating an approximately 10,000 square foot area (the area encompassed by the former concrete pad and the drainage pathway) to a depth of two feet, disposing of the material as hazardous waste, re-grading and re-seeding the property, further assessing (and addressing) the soil surrounding the 10 drums found on site, further assessing (and addressing) the sediments of the adjacent creek bed, further assessing the entire property, and safely closing (i.e. filling in) the mine shafts located on site. If the results of these additional assessments reveal more contamination, the cost for total site clean-up would likely increase beyond \$3 million.

Threat to human health and the environment is based on a lack of site security, the proximity of Milberg Creek, a tributary to the Mississippi River via the Galena River, and the presence of surface soil contaminated with lead and zinc. Fencing for the property is inadequate as only the frontage along North Meridian Road is a barrier to site access. In addition, it appears that the soil cover placed over contaminated soil in 1994 is no longer effective due to erosion and may have become contaminated.



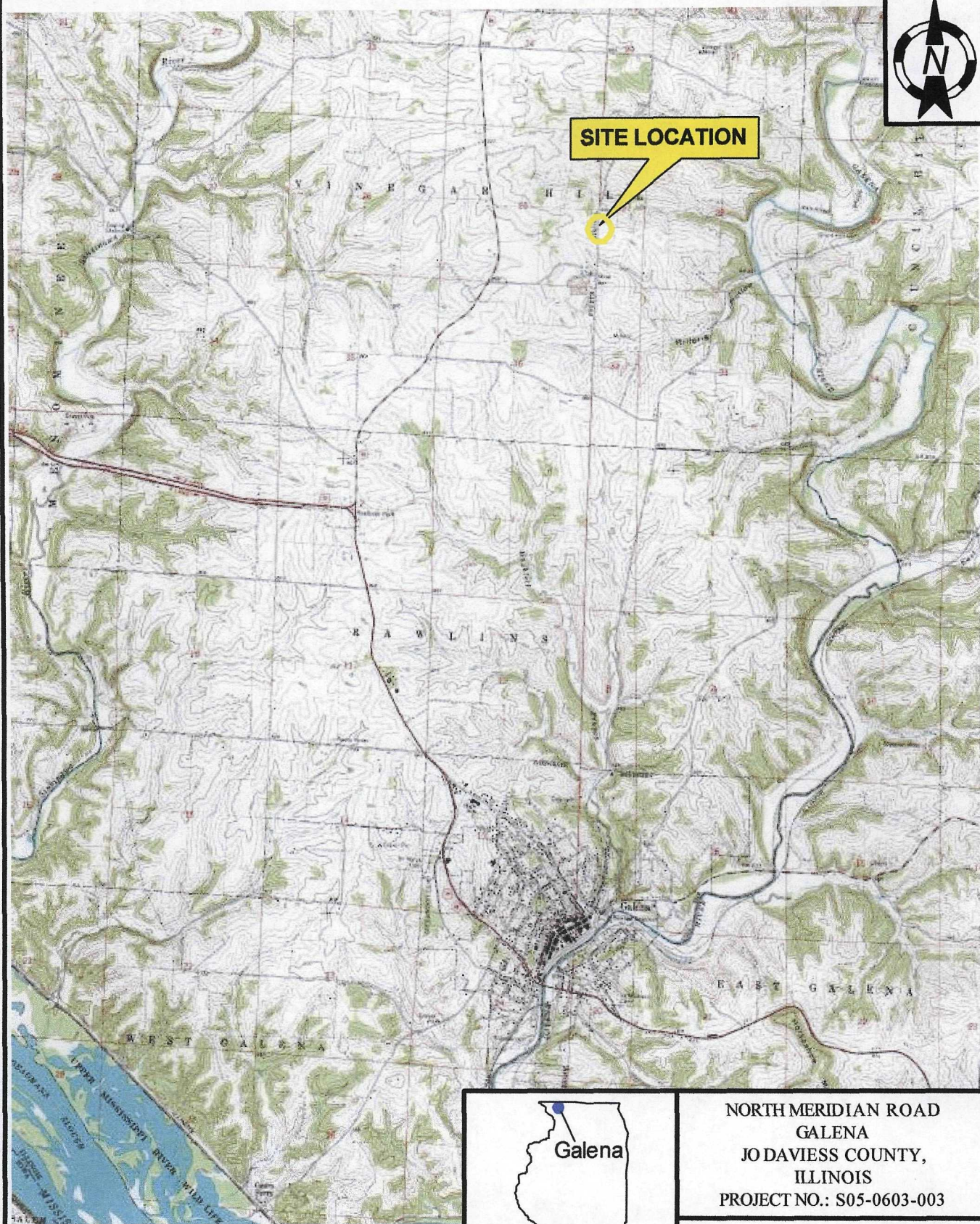
**ATTACHMENT A
TOPOGRAPHIC MAP**



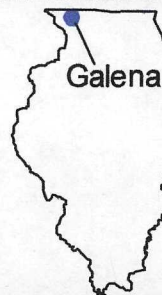
TDD NO.: SO5-0603-003 (Eagle Picher Ohio/Michigan/Illinois properties/Galena, Illinois location)



SITE LOCATION



GEOGRAPHIC COORDINATES:
LATITUDE: 42.281 DEGREES NORTH
LONGITUDE: 90.428 DEGREES WEST



**NORTH MERIDIAN ROAD
GALENA
JO DAVIESS COUNTY,
ILLINOIS
PROJECT NO.: S05-0603-003**

SITE LOCATION

Tetra Tech EM Inc.

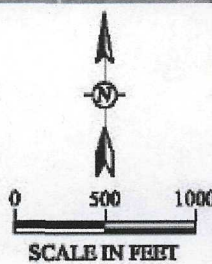
ATTACHMENT B
AERIAL MAP



TDD NO.: SO5-0603-003 (Eagle Picher Ohio/Michigan/Illinois properties/Galena, Illinois location)



\\01\01\0008\LOGS\0003\1L7155\Meridian\Galena.dwg 03/13/2006 chris.caren CH



**NORTH MERIDIAN ROAD
GALENA, JO DAVIESS COUNTY, ILLINOIS**

AERIAL MAP

TETRA TECH EM INC.

SOURCE: MODIFIED FROM U.S. GEOLOGICAL SURVEY 7.5-MINUTE SERIES MAP, QUARTER
QUADRLANCE.HH, GALIANA, 1999

ATTACHMENT C
PHOTOGRAPHIC LOG



TDD NO.: SO5-0603-003 (Eagle Picher Ohio/Michigan/Illinois properties/Galena, Illinois location)



Photograph No. 1 **Date:** March 15, 2006
TDD No.: S05-0603-003 **Orientation:** East
Location: Galena, Illinois
Subject: South area of the former concrete pad and subject site southern property boundary



Photograph No. 2 **Date:** March 15, 2006
TDD No.: S05-0603-003 **Orientation:** East
Location: Galena, Illinois
Subject: Northeastern part of former concrete pad where runoff water would have traveled. Bare ground and moss visible.





Photograph No. 3 **Date:** March 15, 2006
TDD No.: S05-0603-003 **Orientation:** East
Location: Galena, Illinois
Subject: Close-up of bare ground and moss area



Photograph No. 4 **Date:** March 15, 2006
TDD No.: S05-0603-003 **Orientation:** South
Location: Galena, Illinois
Subject: Bare ground east of former concrete pad. Silt fences showing signs of soil transport.





Photograph No. 5 **Date:** March 15, 2006
TDD No.: S05-0603-003 **Orientation:** North
Location: Galena, Illinois
Subject: Former air shaft left from the mine.



Photograph No. 6 **Date:** March 15, 2006
TDD No.: S05-0603-003 **Orientation:** South
Location: Galena, Illinois
Subject: Vertical pipe in center of picture is part of a septic system from the former mine office or former residence.





Photograph No. 7 **Date:** March 15, 2006
TDD No.: S05-0603-003 **Orientation:** NE
Location: Galena, Illinois
Subject: Empty steel barrel drums.



Photograph No. 8 **Date:** March 15, 2006
TDD No.: S05-0603-003 **Orientation:** East
Location: Galena, Illinois
Subject: Close-up of the empty steel drums





Photograph No. 9 **Date:** March 15, 2006
TDD No.: S05-0603-003 **Orientation:** West
Location: Galena, Illinois
Subject: Bare ground and moss in drainage pathway from the former concrete pad



Photograph No. 10 **Date:** March 15, 2006
TDD No.: S05-0603-003 **Orientation:** West
Location: Galena, Illinois
Subject: Drainage pathway from the former concrete pad



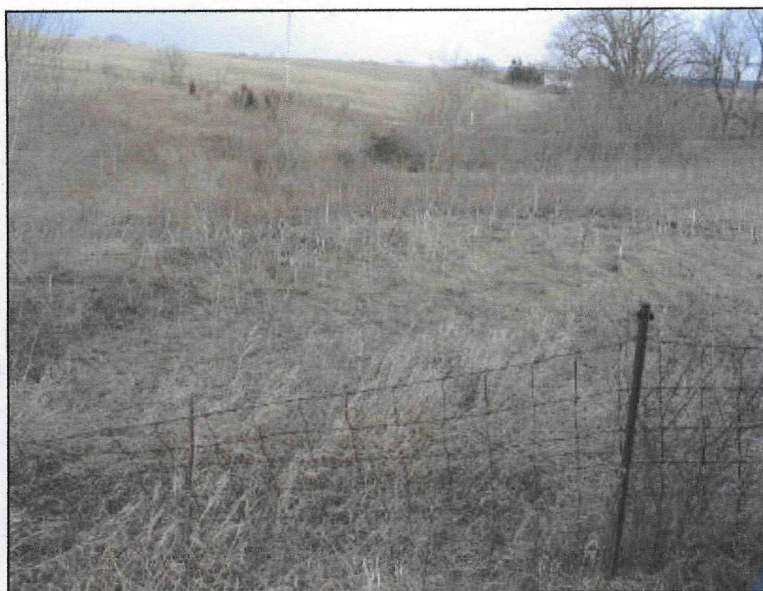


Photograph No. 11 **Date:** March 15, 2006
TDD No.: S05-0603-003 **Orientation:** North
Location: Galena, Illinois
Subject: Concrete slab located NE of the former concrete pad storage area. Purpose is unknown; however it may be a cover for a mine shaft.



Photograph No. 12 **Date:** March 15, 2006
TDD No.: S05-0603-003 **Orientation:** North
Location: Galena, Illinois
Subject: Uneven bumpy terrain northwest of the former concrete pad





Photograph No. 13 **Date:** March 15, 2006
TDD No.: S05-0603-003 **Orientation:** Northeast
Location: Galena, Illinois
Subject: Slope down to drainage area (dry unnamed creek bed). This area was not remediated since it is not in the drainage pathway from the former concrete pad storage location.



Photograph No. 14 **Date:** March 15, 2006
TDD No.: S05-0603-003 **Orientation:** South
Location: Galena, Illinois
Subject: Bare ground east of former concrete storage pad area.



**ATTACHMENT D
STEP REPORT**



TDD NO.: S05-0603-003 (Eagle Picher Ohio/Michigan/Illinois properties/Galena, Illinois location)

**CERCLA
SITE TEAM EVALUATION PRIORITIZATION
Volume 1**

for

**INSPIRATION MINES, INC.
I.D.# 980905202
GALENA, ILLINOIS**

**PREPARED BY:
ILLINOIS ENVIRONMENTAL PROTECTION AGENCY
BUREAU OF LAND
DIVISION OF REMEDIATION MANAGEMENT
FEDERAL SITES REMEDIATION SECTION
SITE ASSESSMENT UNIT**

SEPTEMBER, 1999

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INTRODUCTION

The Illinois Environmental Protection Agency's (Illinois EPA) Site Assessment Unit was tasked by Region V of the United States Environmental Protection Agency (U.S. EPA) to conduct an Site Team Evaluation Prioritization (STEP) of the Inspiration Mines site located in Galena, Illinois. The Site Team Evaluation Prioritization performed under the authority of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) as amended by the Superfund Amendments and Reauthorization Act of 1986 (SARA), commonly known as Superfund.

The site was initially placed on the Comprehensive Environmental Response Compensation and Liability Information System (CERCLIS) on June 1, 1983. The site was placed on CERCLIS due to the following: 1) the potential presence of elevated quantities of lead in a creek adjacent to the site, 2) lead in off-site soils due to surface water run-off and wind-borne material originating from a 10 acre, 40-50 foot tall, tailings pile created during former site operations and 3) indications of groundwater contamination due to disposal of mine wastewater into the mine. A concern also was that waste material had the potential to migrate or may have already migrated from the site into the Galena River, approximately one mile downstream. There is also information indicating the presence of lead and zinc related material throughout the facility property.

The site was evaluated in the form of a Preliminary Assessment (PA), by the Illinois EPA, which was submitted to Region V of U.S. EPA on June 1, 1984. A Screening Site Inspection (SSI) was completed by a contractor tasked by U.S. EPA. The SSI was submitted to Region V of U.S. EPA on December 1, 1984. Following the SSI, a HRS scoring document was completed by a contractor tasked by U.S. EPA. This document was submitted to Region V of U.S. EPA on September 8, 1986.

On March 5, 1999 Illinois EPA's Site Assessment Unit prepared a work plan for field activities which was submitted to U.S. EPA - Region V for review. The field activity portion of the CERCLA Site Team Evaluation Prioritization was conducted on April 19 - 21, 1999. The investigation included interviews with people familiar with the site, a site reconnaissance inspection, and the collection of environmental samples from the Inspiration Mines property and adjacent locations. During the STEP, the Illinois EPA sampling team collected four drinking water samples, one groundwater sample and twenty soil/sediment/waste samples. A field blank and trip blank were also prepared for each water sample set and included in the shipments to the respective laboratories.

1.0 SITE BACKGROUND

1.1 Site Description

The Inspiration Mines site consists of approximately 48 acres of property located three miles north of the City of Galena. The property is located in the southeast corner of Section 25 and the northeast corner of Section 36, Township 29 North, Range 1 West of the Fourth Principal Meridian in Jo Daviess County (Figure 1). The property boundaries border open fields and/or agricultural lands on the north, west and south with Meridian Road on the east, beyond which is open field and/or agricultural lands. These can be seen in Figure 2. Residential properties are sparsely located around the site, however, there are two residences within one quarter mile. One is located adjacent to and southwest of the mine property, the other is approximately one quarter mile east.

The topography of the property consists of rolling terrain with various shallow to deep ravines leading from the property to Millbrig Hollow which then flows to the Galena River. These ravines provide a mechanism for surface water to drain from the site into the Galena River. The area once used for storage of jig tails and float tails (the 10 acre pile) has since been regraded and contoured to form a bowl shaped landscape with various types of vegetative cover being established. Areas once containing mill structures and equipment have now been cleared and have various vegetation established. Although the majority of the site has been successfully revegetated there are some areas where little vegetative cover has been established. Vehicular access to the property is restricted by the presence of fencing and local terrain. However, access to the property can be gained via a gravel road from the west off of State Route 84 and another from the east off of Meridian Road. The only remaining structures on-site are the office building and a garage/barn type structure.

Two distinct surface water drainage pathways have been identified for the Inspiration Mines site. For the STEP report, the two areas will be referred to as the unnamed intermittent stream and Millbrig Hollow. The following paragraphs define each drainage way and are illustrated on the 15-Mile Surface Water Map found in Appendix A.

The unnamed intermittent stream is located along the northeastern portion of the Inspiration Mines site. The intermittent stream appears to originate approximately 900 feet north of the sites office building. Surface water flow of this stream is in a southeasterly direction coming to a confluence with Millbrig Hollow approximately 4000 feet southeast of the sites northeastern property boundary. Millbrig Hollow then flows east and northeast to the Galena River.

The second drainage pathway, Millbrig Hollow, also an intermittent stream, is located approximately 1200 feet south of the mine at its closest point. This stream appears to originate approximately 2400 feet southwest of the sites southwestern boundary. Millbrig Hollow flows east past the mine property then northeast to the Galena River which is approximately 7300 feet east of the mines property boundary. During the period of time when the tailings pile was present at the mine a radial drainage pattern existed. Currently, due to regrading and contouring of the area once containing the pile, drainage of surface water over the majority of the site is directed toward the center of the former pile base, therefore, containing a large volume of surface water onsite. Surface water drainage from the perimeter of the site flows radially then enters several small drainage routes before entering the aforementioned intermittent streams. Previous investigations conducted by Eagle Picher indicated that inorganic constituent contamination, mainly lead and zinc, is present within the sediments of both intermittent drainage routes.

1.2 Site History

The Inspiration Mines site, also known as the Graham Mine, is an inactive lead and zinc mining and milling facility which was established in 1947. Eagle Picher Mines owned this facility and began operations by placing the first shaft in November 1947. The mine was a room and pillar operation which obtained material from the Galena-Platteville limestone and dolomite formation with the working area at a depth of approximately 300 feet below ground surface. The facility remained an active mine until 1966 when mining ceased. However, mined material continued to be brought to the milling operation from other area mines. The milling process continued until May, 1973. The underground operation extracted lead and zinc ore from the mine which extended approximately one mile northwest and one mile southeast of the above ground processing mill. Once the ore was above ground it was crushed and subjected to gravity preconcentration and chemical washing where approximately half the total mill feed was rejected as jig-tails. This type of ore processing is known as "jigging". Jigging produces large amounts of waste water and gravel as a by product. The gravel is referred to as jig tails. Jig tails settle out during the washing step and in this case were stored on site in large piles. The jig concentrate was further refined to sand size particles and subjected to an acid froth where the enriched ore was collected from the froth bubbles. The finer sand size particles, called float tails, also remained on site. Float tails were deposited around the perimeter of the jig tails. The storage on-site of the jig and float tails resulted in a pile approximately 10 acres in size at the base and approximately 50 feet high. Waste discharges from the jigging processes included waste water from the floatation process and overflow from the decanting process. Wastewater was removed to a settling lagoon and then to natural drainage.

In 1966, after abandonment of the mining operation, waste water from the milling processes began to be discharged into the mine via an old mine shaft. Local residents, utilizing private groundwater wells for drinking water, began complaining to the county health department, starting in approximately June 1968, regarding degraded drinking water. Some of these wells were finished in the same geologic formation as is the mine. Private well samples collected showed a correlation between constituents in drinking water and that of the wastewater discharged into the mine. The mine operators were requested by the State Sanitary Water Board to cease discharge of wastewater into the mine.

In 1968 the Illinois State Water Survey conducted an investigation (Appendix D) into the complaints regarding drinking water degradation in the area around the Inspiration Mine site. Results of the investigation indicate that the return of ore processing waste water from this site to the abandoned mine caused a serious deterioration of groundwater quality in an area of approximately two square miles. Due to the results of this study, affected wells were drilled to the St. Peter Sandstone, cased through the affected Galena-Platteville limestone-dolomite and properly sealed to avoid contaminating the deeper aquifer.

In 1970 a 9000 square foot concrete pad was constructed north of the office building for storage of concentrated lead and zinc ore. This storage pad was used to store the ore until enough was available to be shipped to a buyer. Surface water drainage from the pad and immediate surrounding area flowed north and into the previously mentioned intermittent drainage stream. In February 1976 Eagle Picher sold nine acres of property, which included the concrete ore storage pad, to individuals who used this area to raise horses. Also in 1976, Eagle Picher sold 31 acres of mine property to Inspiration Mines

Inc., remaining the current owner. Inspiration Mines Inc. purchased the property, which included the tailings pile, in order to sell the gravel (jig tails) for various uses such as railroad bed material, road construction material, concrete mix, asphalt mix, and road "sand" for traction control during the winter months. Sand on site (float tails) was sold for use as agricultural lime and fill material. During 1980, all mill structures and equipment were liquidated and removed from the property, with the exception of the office building, scales and garage. In 1981, three horses raised on the 9 acre parcel died. Autopsy results revealed that the animals died of lead poisoning. Due to this determination, sampling of the old storage pad and surrounding area took place. Analysis of soil samples collected by IEPA near the concrete pad indicated lead in concentrations which were extremely elevated (Appendix E). Also, samples collected from other areas on and around the mine site were analyzed for total and available (TCLP) concentrations of lead, zinc, arsenic, copper, iron and nickel (Appendix E). Total and TCLP concentrations in a number of samples throughout the site were elevated. Total concentrations of lead and zinc in soil near the pad and in runoff routes leading away from the pad were as high as 29,375 ppm and 223,000 ppm respectively. Total concentrations of lead from the tailings pile was as high as 13,368 ppm. Soil samples collected from a nearby residence indicated total lead at elevated levels (Appendix E). In 1984, as a result of the ruling of a law suit filed against Eagle Picher by the individuals raising horses, the company was required to repurchase the nine acre parcel. Also in 1984, the IEPA referred the site to the Illinois Attorney Generals Office (AGO) based on high levels of lead remaining in the soil surrounding the concrete pad. During this time discussions occurred between potentially responsible parties (PRPs), the Agency and the AGO regarding remedial measures. No effort toward completing plans was taken. In

November, 1984 the company applied for a permit to sell stockpiled tailings. IEPA denied the permit initially but granted it later after revisions were completed. Inspiration Mines was permitted to sell tailings from 1985 through 1986. In January, 1987 Inspiration Mines, Inc. changed names to Inspiration Development Company. In 1989 the PRPs agreed to begin investigation and remedial work in order to avoid being listed on the State Remedial Action Priorities List (SRAPL) or the National Priorities List (NPL). During the time period from 1989 through 1994 numerous groundwater, soil and sediment samples were collected on-site and in the surrounding area by IEPA and the Illinois Department of Public Health (IDPH). Samples of drinking water wells did not reveal lead or zinc contamination, however, the potential remains. A remedial plan for the concrete slab and surrounding area was submitted to the Agency and returned to the PRPs consultant for revisions three times prior to Agency approval. Removal of the pad and remedial construction of the surrounding area took place during the summer and fall of 1994. Estimates of tailings sold from 1985-1996 approximate two million tons, the majority being jig tails. Because of this, the center of the area once consisting of jig tails became lower in elevation than the surrounding float tails. This area has since been contoured, graded and vegetated as has the former concrete storage pad area.

1.3 Applicability of Other Statutes

Based on available information, its years of operation and the fact that many of the existing state and federal environmental regulations did not come into existence until the late 1970's and early 1980's, this facility was not subject to the Federal Insecticide, Fungicide and Rodenticide Act (FIFRA), Atomic Energy Act (AEA) or Uranium Mill Tailings Radiation Control Act (UMTRCA).

Information contained in the Illinois EPA Bureau of Land files indicate that Inspiration Mines Inc. nor Eagle Picher Industries Inc. submitted a "Notification of Hazardous Waste Activity" form to the Agency.

2. EXPANDED SITE INSPECTION ACTIVITIES AND ANALYTICAL RESULTS

This section contains information gathered during the preparation of the CERCLA Site Team Evaluation Prioritization conducted at the Inspiration Mines site. Specific activities included an internal file search, field reconnaissance inspections, and field sampling activities at the facility and surrounding area.

2.1 Reconnaissance Inspection

A reconnaissance inspection of the Inspiration Mines site was conducted by Mr. Brad Taylor of Illinois EPA's Site Assessment Unit in March 1999. The reconnaissance inspection included a walk-through of the property to identify potential sampling locations, determine if there were any additional mine related impacted areas on and/or off the property, and to determine appropriate health and safety requirements. A site representative from Eagle Picher was present during the reconnaissance inspection.

Additional site reconnaissance inspections were conducted by Illinois EPA personnel on April 5 & 6, 1999. The purpose of this visit was to gather visual and analytical screening data which would provide information regarding the current status of the Inspiration Mine site. These visual observations can be found in Section 1.1 and 1.2 of this report. Analytical screening data collected in April 1999 can be found in Table 4.

Prior to conducting screening activities in 1999, Mr. Brad Taylor of Illinois EPA's Site Assessment Unit contacted Mr. John Welu of Inspiration Mines. Mr. Taylor explained the screening activities which would take place in April. Inspiration Mines, Inc. granted access to the Illinois EPA.

2.2 Ground Water Sampling

From 1968 through 1999 there have been many groundwater samples collected from the area surrounding the Inspiration Mines site. The majority of these samples have been residential drinking water wells. Sampling was initiated in 1968 after a local resident complained to the Illinois State Health Department (now Illinois Department of Public Health (IDPH)) that his farm and household drinking water had degraded. It was his belief that mine wastewater being released into the recently abandoned (1966) mine via an old mine shaft was contaminating the local water supply. Private well samples were collected to determine if groundwater was being impacted by that procedure. In July, 1968 the Illinois State Water Survey and Sanitary Water Board began a groundwater study of the area surrounding the Inspiration Mines site. The study area encompassed approximately nine square miles, with the mine site being located in the center. Reference Appendix D for the description of the groundwater quality deterioration investigation and subsequent conclusions.

This STEP entailed collection of three residential drinking water well samples and one on-site groundwater well. Residential wells are indicated as G201- G203/G204. Sample number G204 is a duplicate sample of G203. The residences sampled were located east, west and south of the mine. Distances from the mine ranged from, adjacent to the mine to 2000 feet. Other sample sets submitted with G201 - G203/G204 to the appropriate laboratory were indicated as G205 and G206. These two sets were the field blank and trip blank respectively. The groundwater well is indicated as G104. This sample was collected using the Agency's Geoprobe. The location of this sample (approximately 200 feet south of the office) was chosen based on historical indications that a pond existed in this area. Figures 3 & 4 illustrate the locations of the groundwater

samples. Table 6 describes each sample with its respective location, depth, and physical appearance. Table 3 contains a summary of groundwater analytical data. These samples were collected in order to determine if contamination from the mine is continuing to migrate to groundwater and residential drinking water wells in the area, as had been indicated in the past .

Groundwater flow in the area prior to the beginning of mining operations in 1948 was primarily east and west from a north-south ridge running through Sections 24, 25, and 36 of Township 29 North - Range 1 West.

2.3 Surface Water Sampling

No surface water samples were collected during the STEP event.

2.4 Soil and Sediment Sampling

Illinois EPA personnel collected a total of eleven soil and nine sediment samples (including one duplicate and one background sample for each matrix) on April 20 and 21, 1999. These samples were analyzed for the inorganic fraction only. The samples were collected to determine if contaminants were present at the Inspiration Mines site or nearby targets of concern. Figures 3 & 4 indicate the location of soil and sediment samples obtained during the STEP. Table 6 describes each sample with its respective location, depth, and physical appearance. Tables 1 and 2 contain a summary of soil and sediment analytical data.

Soil samples X102 through X106 and X108 through X111 were collected from eight locations throughout the Inspiration Mines site. These samples were collected in order to determine if heavy metal contamination, particularly lead and zinc is present at

various locations previously used for storage of mine tails, the former storage pad area, surface water runoff locations and former process mill area. With the exception of Sample X103, collected at a depth of between 5 and 7 feet below ground surface, all soil samples were collected within the upper five inches of soil. Sample X109 was a duplicate sample of X108.

Two additional soil samples were collected from residential properties located near the mine site. Sample X101 was collected from the yard of a residence approximately one quarter mile east of Inspiration Mine property. Sample X107 was collected from the yard of a residence located immediately adjacent to the western berm of the mine property. Both samples were collected from the upper two inches of soil after a small patch of grass sod was peeled away. These samples were collected in order to determine if contamination from the mine may have migrated to residential properties via airborne transport. These samples were also used as a representative soil background for comparison.

In an effort to further characterize site soils, of the eight soil sample locations on site, five locations were chosen to have TCLP analysis completed on them. Sample locations X104- X106, X108/X109 and X111 were designated to have the additional analysis performed (Table 4) .

Sediment samples X201 through X209 were collected from surface water drainage routes described in Section 1.1 of this report. These samples were collected to determine if contamination has migrated along these routes and entered the Galena River. Samples X201 and X202 were collected from the northern intermittent drainage way. As mentioned previously, this route received, as it does presently, runoff from the area once containing the concrete storage pad. Sample X202 was collected from within the

property boundaries at a location just west of the point at which the stream exits the property and flows east under Meridian Road. Sample X201 was collected east of Meridian Road, outside of the property boundaries, on private property. Samples X203 - X209 were collected from the drainage route described as the intermittent drainage way in Millbrig Hollow. All of these samples were collected on private property. Sample X206 was a duplicate sample of X205. Sample X204 was used as a representative background for samples collected in Millbrig Hollow, as this location was upstream of where the runoff from the mine enters the stream.

2.5 Analytical Results

Following sample collection, all samples were submitted to pre-arranged laboratories for analysis of Target Compound List (TCL) constituents following chain-of-custody procedures and protocols outlined in the Illinois EPA workplan. Copies of the chain-of-custody forms are provided in Appendix F (Volume 2 of the STEP Report). A copy of the TCL is found in Appendix B. Organic analysis of drinking water samples was conducted by EnviroSystems, Inc. located in Columbia, Maryland. Inorganic analysis of drinking water samples was conducted by U.S.EPA Central Region Lab. located in Chicago, Illinois. Organic analysis of groundwater was conducted by Industrial Environmental Analysis located in Monroe, Connecticut. Inorganic analysis of groundwater was conducted by Sentinel, Inc. located in Huntsville, Alabama. There were no organic soil or sediment samples collected. Inorganic analysis of soil and sediment samples was conducted by Sentinel, Inc. TCLP analysis of selected soil samples was conducted by the Illinois EPA's Division of Laboratories located in Champaign, Illinois. Quality assurance reviews of the sample analysis was performed by each laboratory.

Tables 1 through 4 provide a summary of those samples collected during the CERCLA STEP inspection and the corresponding analytical data. The criteria used to determine what may be considered an observed release was based on those samples considered to be at least three times background concentrations.

The analytical results of the three residential drinking water samples do not indicate the presence of any volatile, semi-volatile or pesticide/PCB organic compounds. The analytical results do, however, indicate significant concentrations of inorganic compounds in G104 and slightly elevated concentrations of lead in G201. Groundwater sample G203 was the background to which the sample data was compared.

The analytical results of soil samples X101 through X111 indicate significant concentrations of inorganic parameters, particularly lead and zinc, in samples X102 - X104, X106, and X108 - X111. The analytical data of these soil samples were compared to background samples X101 and X107.

The analytical results of sediment samples X201 through X209 indicate significant concentrations of inorganic parameters, particularly lead and zinc, in samples X202, X203, X207 - X209. The analytical data of these sediment samples were compared to background sample X204.

Toxic compound leach procedure (TCLP) samples (X101(T) - X105(T)) were collected at five soil sample points to determine if material at those locations was capable of releasing contaminants to the environment through solution. The analytical results of TCLP samples indicate the availability of lead and cadmium in all five samples, and nickel in X104(T). TCLP sample X101(T) was collected at soil sample point X111, X102(T) at X105, X103(T) at X104, X104(T) at X106, and X105(T) at X1108/X109.

Field-based site characterization data was collected in April 1999 using an X-Ray

Fluorescence field instrument.. Two hundred locations were screened using XRF technology. Elevated concentrations of lead and zinc were identified to be present at most locations. Within the screened sediments of the northern unnamed tributary, and Millbrig Hollow zinc levels ranging from non-detect to 4659 ppm and lead from non-detect to 2593 ppm. Within the screened soils on the Inspiration Mines property zinc levels ranged from non-detect to 117,146 ppm and lead from non-detect to 19,200 ppm. An additional ten locations, collected during the sampling event at locations X102, X104-X111, X201 and X202, indicated zinc levels ranging from 128 ppm to 41,000 ppm and lead levels from less than 17 ppm to 9932 ppm.

3. IDENTIFICATION OF SOURCES

This section includes descriptions of the various hazardous waste sources which have been identified at Inspiration Mines during the CERCLA Site Team Evaluation Prioritization inspection. Section 1.1 of the revised Hazard Ranking System defines a "source" as: "Any area where a hazardous substance has been stored, disposed or placed, plus those soils that have become contaminated from migration of a hazardous substance." This does not include surface water or sediments below surface water that has become contaminated.

Information concerning the location, physical description, use, period of use, waste type and composition, size and potential to affect the migration pathways, along with analytical data obtained during the STEP inspection is presented for each source.

Note that the analytical results of the samples collected from the waste sources and targets during the STEP inspection have been compared to the background soil samples X101 and X107, and the background sediment sample X204. While these samples are not necessarily backgrounds for the samples obtained from the waste sources, they have been used for comparison purposes as an indication of elevated concentrations.

3.1 Contaminated Pile (Jig Tails and Float Tails Pile)

The tails pile is located in the center portion of the subject property, approximately one mile west of the confluence of the sites drainage system (unnamed intermittent stream and Millbrig Hollow) with the Galena River. The pile was created through disposal of waste product during the separation and concentration of lead and zinc ore from 1948 through 1973. The coarse crushed limestone and dolomite rejected during the milling process (jig tails) was placed near the center of the property and

accumulated to a height of approximately 40-50 feet. Waste material resulting from further comminuting (crushing) in ball mills to sand size particles and subjected to froth floatation (floatation tails) was deposited via water slurry around the base of the jig tails pile. The float tails also accumulated and added to the size of the jig tails pile. The jig tails pile accumulated to approximately ten acres at the base and 40-50 feet in height. This material contained high concentrations of inorganic constituents such as lead and zinc. The pile remained accessible to human and animal populations throughout their existence. Fencing of the property was limited to small lengths along a portion of the eastern and northern boundaries. As mentioned previously, storm water runoff during rain events flowed from the pile, off site in a radial pattern and entered the Galena River via the two main drainage routes. Due to the sale of gravel (jig tails) for a number of years after milling operations ceased, the pile was reduced in size and subsequently the center of the pile area became lower in elevation than the perimeter. With recontouring, grading and revegetation in 1996, run off now remains on site as it flows radially toward the center of the former pile.

Four samples (X105, X106, and X108/X109) were collected from the former pile during the STEP inspection. Specifically, these samples were located near the northeast, west and south-central portions of the former pile respectively. The analytical results of these samples indicate that they contain significant concentrations of lead and zinc. The analytical results of the material sampled was compared to background soil samples X101 and X107. Each of the soil samples which contained significant concentrations of contaminants became such as a direct result of the Inspiration Mines milling process and waste disposal. The 25 years of disposing of milling waste activities have impacted shallow soil locations throughout the Inspiration Mines site. Based on measurements

obtained using a planimeter and a scaled aerial photograph, the pile was determined to contain a total area of approximately 20 acres.

There was no natural or synthetic liner constructed beneath the pile prior to its formation. Since the pile had no liner, the groundwater migration pathway is considered to be threatened. The continuing release of contaminants to Millbrig Hollow caused by storm water run off from the perimeter slopes of the former pile area is a threat to the surface water pathway. Contaminants released into Millbrig Hollow and evident at the confluence of the Galena River are similar to those contained in the pile area. Based on Federal Emergency Management Agency National Flood Insurance Program Flood Rate Insurance Maps the pile area is not within a 100 year floodplain boundary.

3.2 Contaminated Soil (Concentrated lead and zinc storage pad area)

The area of contaminated soil is defined as that which once contained the 9000 square foot concrete storage pad and the surrounding soil. The soils which make up this source consist of combinations of sand, silt and clay. Soil contamination resulted in this area due to the spread of concentrated lead and zinc ore released from the former storage pad. The storage pad was constructed north of the office building on a slope which trends northeast toward the, previously mentioned, unnamed drainage way. During the time period when the storage pad was in use some concentrated ore placed on the pad had washed off onto the soil. Ore material via runoff has been transported down slope toward the drainage way. Each of the soil samples which contained significant concentrations of contaminants became such as a direct result of the uncontrolled release of concentrated ore.

Based on current information, this source is defined by one soil sample collected

from the runoff route down slope of the former concrete pad. Soil contamination at this location was determined by using sample point X111. This sample was collected within the upper three inches of soil and indicated elevated contamination, significantly above background concentrations, attributable to past site operations and activities. Figure 3 illustrates the location of contaminated soil.

There is no maintained engineered cover at this location other than the area being regraded and revegetated. There is currently no run-off management system to prevent contaminants from migrating into the adjacent surface water other than vegetative cover. There was, however, silt fencing in place while the area was being regraded and revegetated in 1994. There is no fence surrounding this area of contaminated soil. This allows free accessibility. Based on Federal Emergency Management Agency National Flood Insurance Program Flood Rate Insurance Maps the former storage pad area is not within a 100 year floodplain boundary.

3.3 Contaminated Soil (Overland Route)

As mentioned earlier in this report, two drainage areas have been defined to be present on the Inspiration Mines site. The unnamed intermittent tributary north of the former storage pad area and the intermittent tributary called Millbrig Hollow south of the Inspiration Mines property. Associated with the northern, unnamed tributary and Millbrig Hollow are additional areas of contaminated soil. These areas of contaminated soil are considered sources which include overland routes leading from the former storage pad area (north) and the main milling area/tailings pile (south) to the Galena River. The overland route provides the mechanism by which lead and zinc contaminated sediments and waste may be transported from source areas to the probable point of entry (PPE) into

the perennial water body (Galena River). There are no barriers preventing surface water flow from leaving the storage pad area and entering the unnamed tributary. Once in the unnamed tributary, surface water may readily flow from this intermittent drainage way into Millbrig Hollow and then the Galena River. Surface water flow from the milling area/tailing pile has, as mentioned previously, has been altered to mostly flow toward the center of the former pile. However, there are no barriers preventing perimeter runoff from leaving the site.

During the STEP inspection samples X201 and X202 were collected from the unnamed tributary downstream of the runoff from the storage pad area. Samples X203 - X209 were collected from Millbrig Hollow. Sample X204 was collected as a background sample approximately 200 feet west of where runoff from the milling area/tailings pile enters Millbrig Hollow. Sample X209 was collected approximately 120 feet west of the confluence of Millbrig Hollow and the Galena River. Samples were collected from the respective tributaries within the upper two feet of sediment and contain contamination similar to that detected within the area formerly containing the storage pad, milling area and tailings pile. Using a scaled USGS topographic map, the northern unnamed tributary joins Millbrig Hollow approximately 4300 feet from the point at which runoff from the storage pad area enters the tributary. The distance from the point at which runoff from the milling area/tailings pile enters Millbrig Hollow to the point at which the unnamed tributary enters Millbrig Hollow is approximately 3100 feet. The confluence of Millbrig Hollow and the Galena River is another 4200 feet northeast. Total distance of the Millbrig Hollow contamination is 7300 feet. On average the width of both, the unnamed tributary and Millbrig Hollow is approximately 4 feet. Based on the above approximate distances and stream widths an additional 46,400 square feet of

contaminated soil exists in association with the Inspiration Mines site (29,200 square feet in Millbrig Hollow and 17,200 square feet in the unnamed tributary). According to Federal Emergency Management Agency National Flood Insurance Program Flood Rate Insurance Maps (Figure 6) a small portion (600 feet) of the contaminated soil in Millbrig Hollow is located within the 100-year floodplain boundary of the Galena River. Sample X209, consisting of elevated contamination significantly above background concentrations and attributable to past site operations and activities, therefore, represents a release to surface water based on chemical analysis and observation.

During data interpretation associated with the drainage ways it became apparent that other sources of lead and zinc contamination may exist in the immediate area beyond those of Inspiration Mines. Due to former or current lead and zinc mining operations taking place within close proximity to Inspiration Mines and waste disposal there of, it is possible that contributing factors to the stream contamination documented during this investigation are not entirely attributable to Inspiration Mines. Further investigation of this area may be warranted to determine other potential sources.

4. MIGRATION PATHWAYS

The CERCLA Hazard Ranking System identifies three migration pathways and one exposure pathway by which hazardous substances may pose a threat to human health and/or the environment. Consequently, sites are evaluated on their known or potential impact to these four pathways. The pathways evaluated are groundwater migration, surface water migration, soil exposure, and air migration.

This section includes data and information collected during the CERCLA Site Team Evaluation Prioritization inspection together with information documented from other sources, which may be useful in analyzing the impact of the Inspiration Mines site on the four pathways and the various human and environmental targets within the established target distance limits.

4.1 Groundwater Pathway

Regional water well data and information from the Illinois State Geological Survey and the Illinois State Water Survey indicate that much of the area near the site consists of thin Pleistocene unconsolidated glacial deposits and loess which may range in thickness from 0 - 100 feet. Below the glacial deposits in some areas is the Silurian dolomite which can be 0 - 200 feet thick. Beneath the Silurian dolomite is the Maquoketa Shale Group. This Group is followed by the Galena and Platteville Groups followed by the Ansell Group, which contains the St. Peter sandstone, and then the Prairie du Chien Group. In the area around the site the top of the St. Peter sandstone is at an approximate depth of 350 below ground surface. Bedrock in the vicinity is estimated to be approximately 15 - 20 feet below the ground surface.

Site specific geologic information was collected by contractors working for

Inspiration Mines and by the various governmental agencies which have been involved with the site throughout the years. Top soil ranged from 0 to 2.5 feet thick. Beneath the top soil was silt and clay layers ranging in thickness from 2 to 10 feet. Below this layer the Galena-Platteville dolomite and limestone was encountered. The thickness of the limestone near the site is approximately 290 feet. Below the Galena-Platteville formation is the St. Peter sandstone. The majority of local residents utilize groundwater found in the Galena-Platteville dolomite and limestone as their source of drinking water. Groundwater is utilized for potable drinking water within four miles of the Inspiration Mines site. According to a study completed by the Illinois State Water Survey in 1968 indications are that groundwater flow within the area was primarily to the east and west from a north-south ridge through Sections 24, 25, and 36 of T.29N - R.1W. Local well logs indicate that private wells utilize groundwater from 60 to 250 feet deep.

The Village of Galena operates a municipal well system just within the four mile distance limit of the site. Two wells are inactive and used for backup. The active wells are located northwest and southwest of the City. The inactive wells are finished at 1515 and 1575 feet below ground surface in the Franconia Formation, Iron-ton-Galesville sandstone and the Elmhurst-Mt. Simon Formation. Both active wells are finished at 1600 feet below ground surface and utilize the Eminence-Potosi and Eau Claire Formations. There have been no indications from the City that there are contaminants in any of the wells. The following table depicts an estimation of the number of groundwater wells located within 4-miles of the site. The nearest well is located approximately 220 feet west of the site. This well was sampled during Expanded Site Inspection field activities and was found to contain 11 ppb. lead.

Number of wells and users within 4-miles of
Inspiration Mines

Distance (mi)	Private Wells	Population Served
0 - 1/4	2	5
1/4 - 1/2	3	8
1/2 - 1	15	39
1 - 2	23	60
2- 3	46	120
3- 4	50	130

In addition to the above, population utilizing water from the Galena water system is estimated to be 3650.

During the STEP inspection groundwater samples were taken at four locations by Illinois EPA personnel. Sample G104 was collected from a location approximately 200 feet south of the office building on Inspiration Mines property through utilization of the Agency's Geoprobe. Samples G201 - G204 were collected from three residences within one half mile of the mine. The nearest, sample G201, as mentioned, was collected from a private residential well located approximately 220 feet west of the site.

Analysis of sample G104 indicated elevated levels of inorganic contamination within the ground water. Although this well is not used for drinking purposes, it appears to have been impacted by activities conducted on the property. The type of inorganic constituents were similar to those detected in other sources located on the Inspiration Mines site.

4.2 Surface Water

Section 1.1 describes two separate intermittent surface water drainage routes on the Inspiration Mines site. The routes drain different portions of the site but join together

approximately 3600 feet east of the mines eastern property boundary. Surface water then flows to the Galena River. This confluence is the probable point of entry (PPE) where contaminants enter a perennial water body. The (PPE) was determined by the location of sample point X209. Sample X209 was located within Millbrig Hollow and indicated contamination similar to that detected within on-site sources. From the PPE, Millbrig Hollow flows east for approximately 120 feet before entering the Galena River. Once present in the Galena River, surface water continues to flow until reaching the 15-mile Target Distance Limit in the Mississippi River near Aiken, Illinois. The 15-Mile Surface Water Route is illustrated in Appendix A.

According to Federal Management Agency National Flood Insurance Maps the only portion of the drainage way leading from Inspiration Mines to the Galena River, described in Section 3.3, located within the 100 year flood plain boundary, is a 600 foot length just west of its confluence with the Galena River. National Wetlands Inventory Maps of the area indicate that the Galena River and its banks are classified as riverine, lower perennial, unconsolidated bottom, permanently flooded. One other indicated wetland is located in Millbrig Hollow approximately 1600 feet east of the confluence of Millbrig Hollow and the unnamed tributary. It is classified as palustrine, unconsolidated bottom, intermittently exposed, diked impoundment. Based on Illinois EPA data, there are no known surface water intakes within the Target Distance Limit (TDL) of the surface water pathway. According to the Illinois Department of Natural Resources (DNR), the Galena and Mississippi Rivers are considered fisheries and are also used for recreational purposes.

During the STEP inspection nine sediment samples were collected from locations representing the two separate drainage pathways. These samples were collected to

determine if hazardous substances may have migrated into the Galena River as a result of past mining activities. The results of sample X209 indicate the presence of contamination related to mining activities within the perennial stream. As mentioned previously, sample X209 was collected approximately 120 feet west of the confluence of Millbrig Hollow with the Galena River. The specific type of hazardous constituents were similar to those detected in two upgradient sources described in Section 3.0 of this report.

In April 1999, prior to the STEP investigation, Illinois EPA personnel collected screening data from soil and sediments on the Inspiration Mines site. The results indicate that heavy metal contamination does exist within locations which would contribute to surface water contamination. Although these results are semi-quantitative in nature, they did indicate several areas containing elevated heavy metal levels.

4.3 Soil Exposure

Mining and beneficiation of crude ore activities no longer occur on the investigative property. These types of activities occurred from 1947 until 1973. Although mining activities ceased in 1966 and beneficiation ceased in 1973, the waste pile and other areas containing waste material still exist on the property. The property remains accessible and there are limited signs of recreational use throughout the property.

Using an Arcview 4-mile map, U.S. Geological Survey topographical map (Figure 2) and U.S. Census Data, an estimated 52 people reside within one mile of the site. The nearest resident is located approximately 350 feet west of the site. There are no schools or day care facilities on-site or within 200 feet of documented soil contamination.

Soil samples were collected from 10 locations during STEP inspection field activities. All soil samples except X103 were collected from the upper two feet of soil

and exhibited elevated levels of contamination related to mining activities. Sample X103 was collected from between 5 - 7 feet below ground surface and also exhibited elevated levels of contamination related to mining activities.

All sediment samples (X201 - X209) were collected from intermittent drainage ways leading from the mining waste areas into the Galena River. Since these samples were collected from an intermittent drainage way, the HRS rules recognizes these to be considered soil samples. Due to this consideration, soil contamination also exists within the unnamed tributary and Millbrig Hollow and the Galena River. Samples collected from these locations indicated inorganic contamination significantly above background levels.

Soil samples from two residential locations were collected during the STEP inspection. Levels of constituents identified on these properties were not uncharacteristic for this part of the state.

Nearby population within 1-mile of the site

Distance(mi)	Population
1- 1/4	5
1/4 - 1/2	8
1/2 - 1	39
Total	52

The number of people was calculated using 2.61 persons per household in Jo Daviess County, as established by the U.S. Census Bureau.

4.4 Air Route

No formal air samples were collected during the April 1999 STEP inspection. Although no formal air samples were collected, ambient air was monitored intermittently with a Toxic Vapor Analyzer (TVA). Due to adverse weather conditions, which could possibly damage the instrument, it was used when conditions warranted. There is a

potential for wind blown particulates to be carried from the property since contamination has been found in the shallow soil and portion of the site are unvegetated. An estimated 1580 people live within a four-mile radius of the Inspiration Mines site. No schools or day care facilities are located within 200 feet of observed contamination.

Individuals potentially exposed to air-borne contaminants

Distance (mi)	Population
0 - 1/4	5
1/4 - 1/2	8
1/2 - 1	39
1 - 2	60
2 - 3	120
3 - 4	2539
Total	2771

The number of people was calculated using 2.61 persons per household in Jo Daviess County, as established by the U.S. Census Bureau.

5. ADDITIONAL RISK-BASED OBJECTIVES

This section discusses additional screening objectives used to evaluate the Inspiration Mines site. These objectives have not been used to assess the site for Hazard Ranking System (HRS) purposes.

5.1 TIERED APPROACH TO CORRECTIVE ACTION OBJECTIVES (TACO)

The Illinois EPA's TACO guidance document (effective July 1, 1997, under 35 IL Adm. Code Part 742), can be used to develop site specific remediation objectives for sites being addressed under the states Site Remediation Program. This document discusses key elements required to develop risk-based remediation objectives, how background values may be used, and provides guidance through three tiers of the risk-based approach. The Illinois EPA uses this guidance, and the groundwater standards established in 36 IL Adm. Code 620, to determine soil and groundwater remediation objectives.

5.1.1 TACO Soil Objectives

The soil contaminants from the Inspiration Mines site will be compared to the soil remediation objectives established for industrial/commercial properties, with the inhalation, ingestion, and migration to groundwater pathways each evaluated. Tier 1 consists of "look-up" tables, which considers limited site-specific information and are based on simple numeric models. The following table compares key contaminants only when Tier 1 objectives have been exceeded.

When compared to Tier 1 soil objectives, arsenic exceeded these objectives at all locations on the Inspiration Mines site. Lead was found to exceed TACO Tier 1 corrective action objectives in fourteen locations. Zinc exceeded TACO Tier 1 corrective

action objectives in two locations.

Compound	Tier 1 Objective	X101	X102	X103	X104	X105	X106	X107
Arsenic	3	7.7	61	64	31	48	44	18
Lead	400	N.A.	9210	11600	10900	737	1800	540
Zinc	61000	N.A.	63400	64400	N.A.	N.A.	N.A.	N.A.

Compound	Tier 1 Objective	X108	X109	X110	X111	X201	X202	X203
Arsenic	3	45	37	51	31	6	11	27
Lead	400	2140	1760	3940	32700	N.A.	N.A.	822
Zinc	61000	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.

Compound	Tier 1 Objective	X204	X205	X206	X207	X208	X209
Arsenic	3	10	8	12	37	34	27
Lead	400	N.A.	N.A.	N.A.	832	2100	441
Zinc	61000	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.

*All values are in parts per million

5.1.2 TACO Groundwater Objectives

After reviewing the geology, groundwater usage of the area, and *Groundwater Quality Standards*, groundwater beneath this site can be classified as Class I groundwater. The decision was based upon the fact that groundwater is located more than 10 feet below land surface and within fractured carbonate rock more than fifteen feet thick. The following table depicts those contaminants which exceed Class I groundwater objectives.

Although a few inorganic compounds exceeded background levels in the drinking water wells, only one well (G201) contained a specific contaminant above Class I groundwater standards. Analysis of the groundwater sample collected through use of the

Agencys Geoprobe (G104) detected levels of arsenic, cadmium, iron, lead, manganese, mercury, thallium, and zinc above Class I criteria.

Compound	Class I Objective	G104	G201
Arsenic	50	147	N.A.
Cadmium	5	281	N.A.
Iron	5000	155000	N.A.
Lead	7.5	34400	11
Manganese	150	7200	N.A.
Mercury	2	3	N.A.
Thallium	2	8	N.A.
Zinc	5000	165000	N.A.

* all values are listed in parts per billion

5.2 SEDIMENT QUALITY GUIDELINES

The sediment samples collected during the STEP inspection were compared to ecological benchmarks to help determine whether site activities have impacted the surface water pathway. Two sources of benchmarks were used for this comparison: Ontario sediment quality guidelines and U.S. EPA ecotox thresholds. Ontario sediment quality guidelines are non-regulatory ecological benchmark values that serve as indicators of potential aquatic impacts. Levels of contaminants below Ontario benchmarks indicate a level of pollution which has no effect on the majority of sediment-dwelling organisms. Contaminants for which no Ontario benchmarks were available were compared to U.S. EPA ecotox thresholds. Ecotox thresholds are ecological benchmarks above which there is sufficient concern regarding adverse ecological effects to warrant further site investigation. Ecotox thresholds are to be used for screening purposes and are not regulatory criteria, site-specific cleanup standards or remediation goals. As there were

no Ecotox Thresholds listed for inorganic constituents, only the Ontario Benchmarks were referenced.

Analysis of the sediments leading from the site sources indicate that arsenic, cadmium, copper, iron, lead, manganese, nickel, silver and zinc exceed ecological benchmarks. The nature of the contaminants are similar to those detected within sources located upgradient and are related to the Inspiration Mines facility. These sediments are located within water bodies known to be used as fisheries. The following table depicts sediment quality data.

Compound	Benchmark	X201	X202	X203	X204	X205	X206	X207	X208	X209
Arsenic	6 ¹	N.A.	11	26.8	9.6	7.8	11.6	36.9	33.6	26.9
Cadmium	0.6 ¹	N.A.	3.4	9.6	N.A.	N.A.	N.A.	8.3	12.2	5.6
Copper	16 ¹	N.A.	16	36.6	N.A.	N.A.	16.9	26.4	66.7	21.3
Iron	20000 ¹	N.A.	N.A.	50900	14100	15500	18700	32800	45900	32900
Lead	31 ¹	58	267	822	N.A.	43.7	45.8	832	2100	441
Manganese	460 ¹	1900	1110	9590	677	1000	1300	983	1080	1860
Nickel	16 ¹	19	16.2	54.9	N.A.	N.A.	N.A.	45.7	27.6	35
Silver	0.5 ¹	0.92	0.91	3.9	0.74	0.72	0.98	2.1	2.2	1.7
Zinc	120 ¹	191	1490	2670	240	285	289	4510	5940	6140

Benchmark Source:

1. Ontario Sediment Screening Benchmarks

* all values are listed in parts per million

6. REFERENCES

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- U.S. Geological Survey, 1968, Galena, Quadrangle, 7.5 Minute Series 1:24,000.
- U.S. Geological Survey, 1968, photo revised 1975; Scales Mound West, Quadrangle, 7.5 Minute Series 1:24,000.

U.S. Geological Survey, 1952, photo inspected 1978; Cuba City, Quadrangle, 7.5 Minute Series
1:24,000.

FIGURE 1
SITE LOCATION MAP

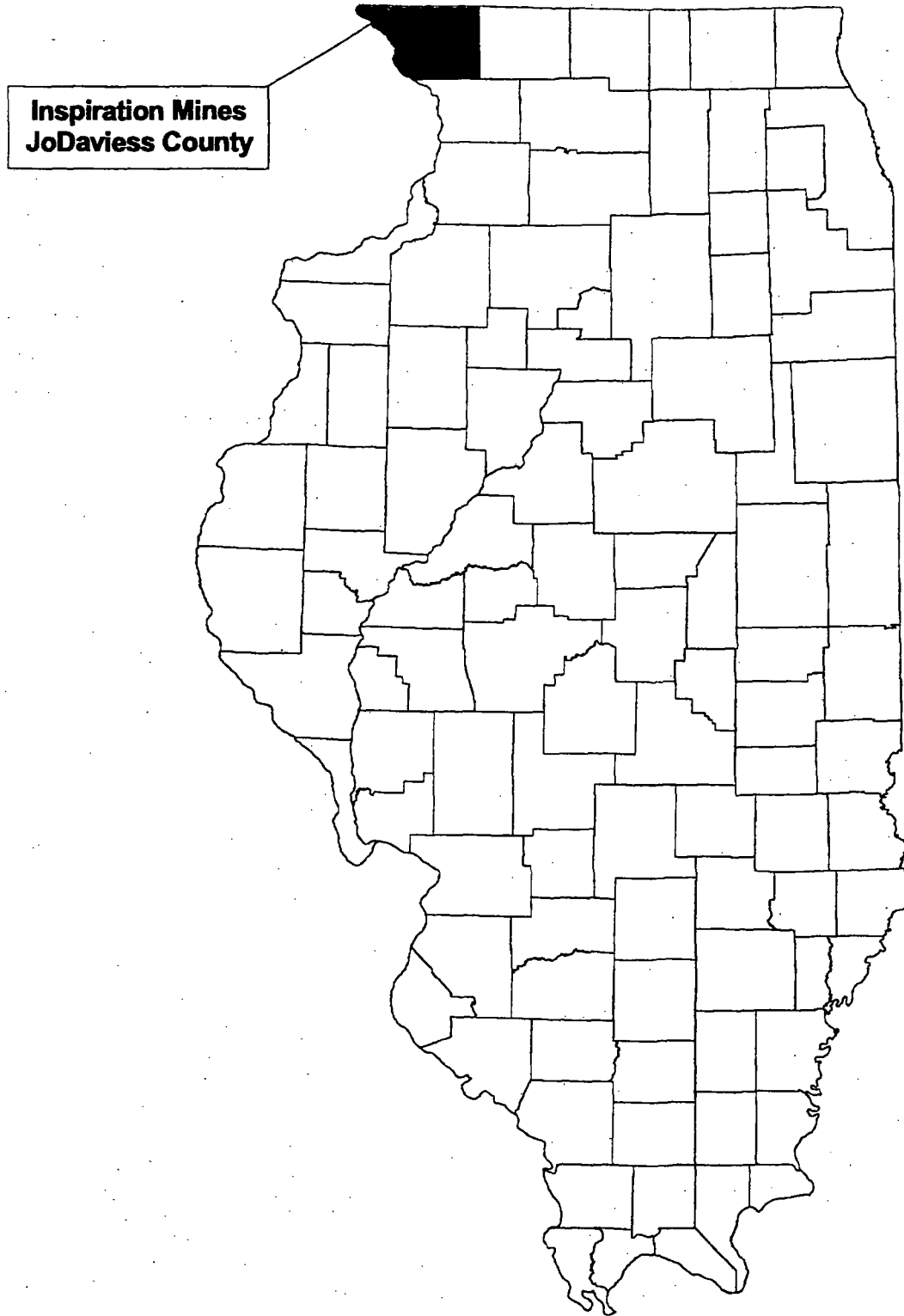
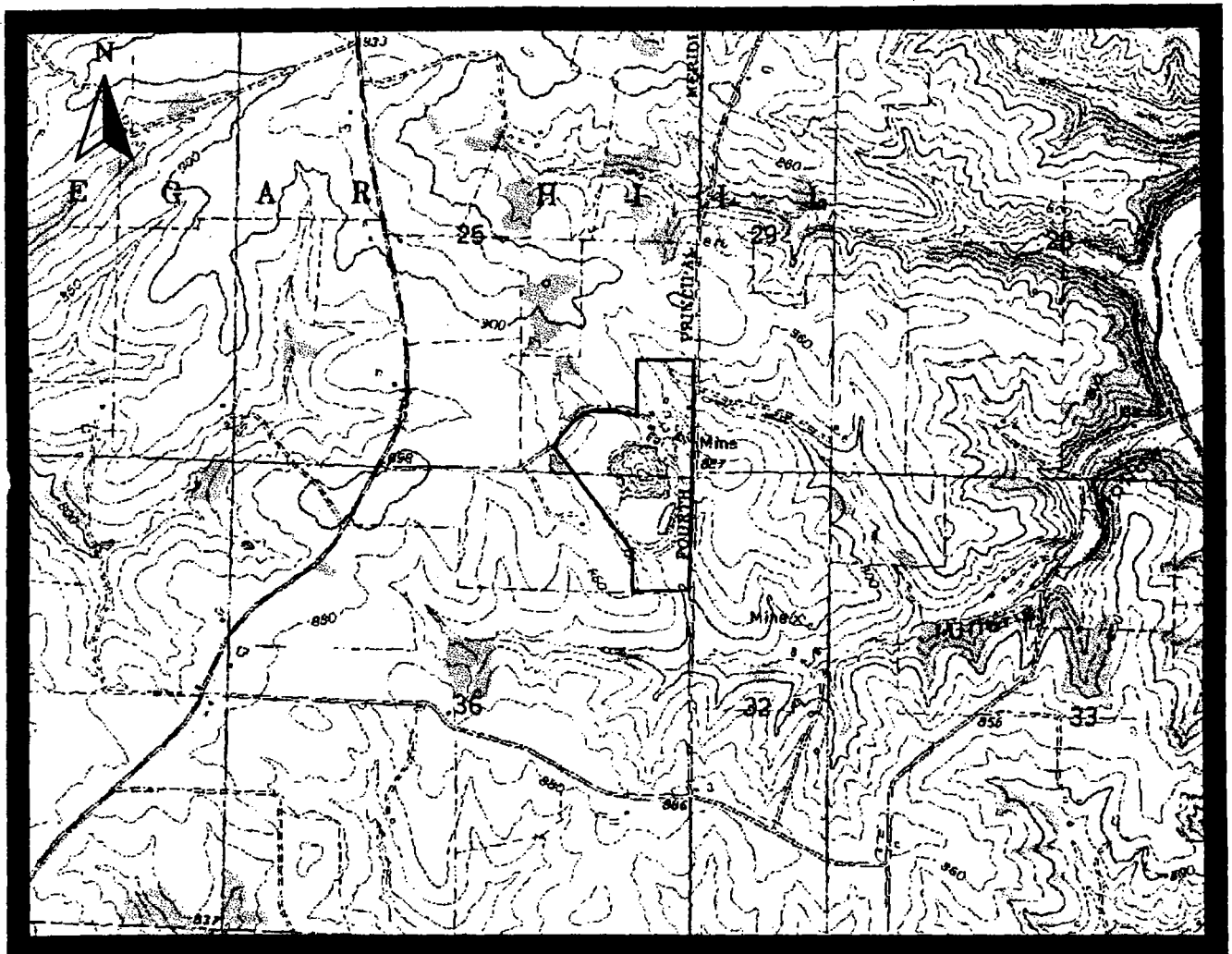


FIGURE 2 SITE TOPOGRAPHIC MAP

Inspiration Mines
Galena, Illinois
JoDaviess County
ILD # 980905202



Approximate Site Boundary

Map Scale



map source: Galena Quadrangle Topographic Map, October 6, 1997

Sample Location Map 2



Inspiration Mines Site

G203/G204

X101

X207

X209

X204

Mitbrig Hollow

X205/X206

X208

G202

Galena River

Galena

LEGEND



Sample Location



Approximate Site Boundary



Roads



River, Stream, or Waterbody

Map Scale

2000 0 2000 4000 6000 Feet

base map: ARCVIEW 3.1 JoDavless County





FIGURE 5

1999 ILLINOIS XRF SCREENING SAMPLE LOCATIONS

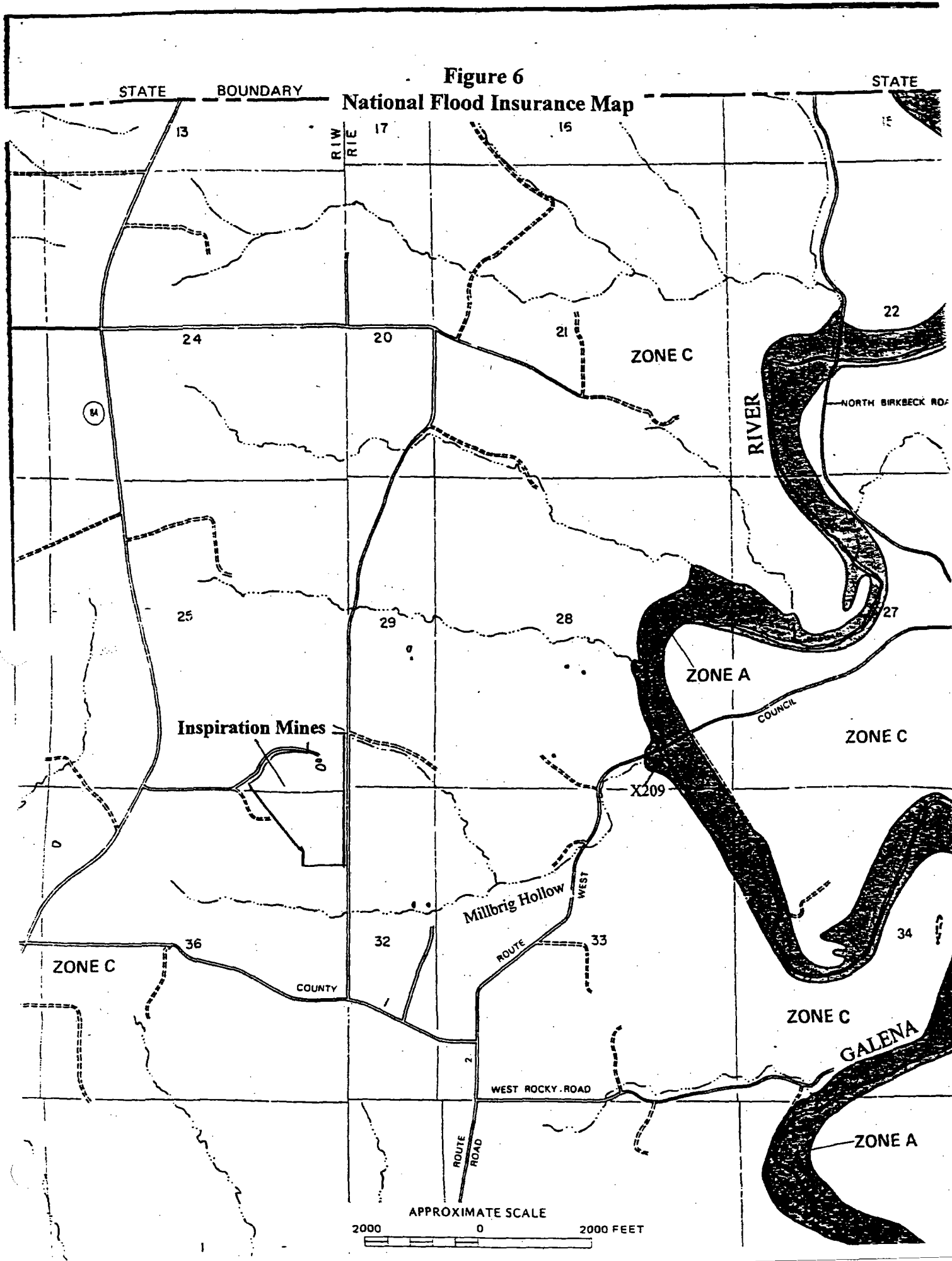
XRF Location



Approximate Scale
1:3470 1" = 290'

Figure 6

National Flood Insurance Map



NATIONAL FLOOD INSURANCE PROGRAM

FIRM
FLOOD INSURANCE RATE MAP

COUNTY OF
JO DAVIESS,
ILLINOIS
(UNINCORPORATED AREAS)

PANEL 50 OF 275

COMMUNITY-PANEL NUMBER
170902 0050 B

EFFECTIVE DATE:
JANUARY 18, 1984



Federal Emergency Management Agency

ona, IL

Sample	Lead	Zinc	Iron	Chromium	Arsenic	Hg	Copper	Nickel	Cobalt	Molybdenum	Zirconium	Sirconium	Rubidium	Manganese															
TACO	400	61000		420	7.2	81	8200	134100	12000																				
46	1535.2	132.7	3513.6	287.8	4403.2	2577.6	1253.6	1418.8	33.3	143.6	-31.7	108.6	-189.4	296	353.4	351.8	-223.8	780.4	21.7	21.7	13.4	33	-41.8	35	-398.8	2374.4			
47	1439.2	126.5	4560	307.8	43027.2	2550.4	-888	1408.6	-10.8	136.8	0	107.3	-216	319.8	241.8	356.6	419.2	711.6	20.9	20.9	17	32.3	-43.4	33.9	2332.8	2435.2			
48	1021.6	101.8	30174.4	223.6	1688.8	2085.6	703.6	1688.8	86.7	112.3	-62.8	84.9	-189.5	252.8	282.2	298.2	41.5	638	5.8	5.8	19	29.5	-1.4	33.2	638.8	2003.2			
49	995.2	120.3	62811.6	401	52480	3118.4	703.6	1601.6	10.2	133.2	-30	118.5	-468	352.6	399.4	21.2	-61.3	897.8	24.2	24.2	6	13.4	35	-14	39.8	-1253.6	2769.6		
50	898.4	111.5	5684.4	362.4	41216	2568.6	1731.2	1428	67.7	127.6	73.3	114.5	-199.8	368.6	121.1	366	72.7	789.6	22.6	22.6	-22.7	27.1	34.4	-0.7	39.3	-1993.8	2358.8		
51	382.6	51.3	864	94.5	1267.2	913.6	100.4	609.2	-21.6	57.1	18.7	44.9	-77.3	121.9	183.3	189.5	317.4	13.1	13.1	63.1	18.7	25.7	10.8	-2.9	21.6	-17.5	983.2		
52	587.2	95.5	2652.8	203.9	2693.2	1706.8	702.6	1005.6	-48.2	104	36	81.5	-36	214.6	-32.6	257.6	183.8	548.6	18.4	18.4	40.7	21.3	4.3	28.6	3.4	31.5	-1088.8	1582.4	
53	763.2	99.4	2352	218.8	3230.2	2180.4	92.1	127.8	37	132.8	36.9	144	-31.2	235.8	60	320.2	758.4	704.4	18.4	18.4	21	2.8	20.9	-61.2	31.9	-458.4	1327.6		
54	1530.4	124.8	18841.6	732	31308.6	2030.4	5.4	1280	37	132.8	36.9	144	-81.5	253.2	383.6	412.8	97.2	707.8	19.2	19.2	0	29.8	25.5	33.4	1704	2040			
55	488.4	57.1	1413.6	121.2	9058	908.8	-54.1	615.2	18.7	85.7	-55.2	54	-15.3	146	9.3	153	151.2	287.2	13.5	13.5	13.8	17.9	-11.8	20.9	1227	880			
56	458.2	78.6	4003.2	268.2	23718.4	1700.8	52	1053.6	22.4	89.7	-114	82.2	-139.8	286.4	188.7	281.2	-18.8	548.8	19.4	19.4	18.5	22.8	17.9	-1.5	32.8	211.8	1732.2		
57	1092.8	119.3	2030.4	213.2	45158.4	2734.4	516	1472	119.8	134.2	-43.9	97.6	-81	263.8	107.5	353.4	-36.3	805.2	22.8	22.8	-23.5	37.3	35	-33.6	36.7	-204.2	2512.2		
58	608.8	85.3	2024	190	40192	2271.4	605.2	1238.8	-27.6	94.9	32.8	77.5	81.3	234.6	-1.4	301.4	104.3	888.8	19.5	19.5	-20.4	12.4	28.3	-8.3	32.1	-919.2	2120		
59	285.6	49.2	750.4	88.8	13542.6	943.2	163.4	606.4	49.6	56.1	-37.4	41.7	-128	111.8	183	158.1	63.3	321.4	4	4	13.5	40.3	0.8	18.4	41.3	24.1	10.4	889.6	
60	956	94.3	2054.4	178.1	31997.6	1873.6	1083.6	1076	-40.7	102.6	18.7	78.3	-143.9	211.8	240.6	268.4	-25.7	584	17.3	17.3	16.3	26	-20	29.3	-1332	1787.2			
61	1107.2	112.2	2739.2	225.2	33843.2	2251.2	129.5	1324.6	-36.5	113.1	-18.2	82.4	-38.3	218.2	95.2	260.4	368.4	585.6	18.5	18.5	17.3	0.7	25.6	-38.7	27	-141.3	1721.6		
62	630.8	60.7	1726.4	163.6	29414.4	1790.4	372.8	1028.4	-1.4	133.2	60.5	86.3	28.6	268.4	105.8	313.8	228.6	672	19.9	19.9	20.2	18.7	34.4	0.9	39.6	500.6	2112.8		
63	384.6	73.6	1428.8	182.1	28977.6	1931.2	593.8	1091.2	-28.5	89.4	19.8	70.5	-197.5	193.5	128	251.4	-23.1	581.8	17.3	17.3	18	22.4	17.3	28.1	28.8	27.8	-1078.2	1820.8	
64	444	64.5	1435.2	136.9	18521.6	1272.8	-38.9	789.4	31	73.8	14.7	59.5	-78.2	166.6	58.8	200.4	63.6	421.2	15.5	15.5	17.5	27.1	26.3	-1.9	25.8	-155.3	1700.8		
65	656	79.4	2222.4	180.3	30336	1792	-13	1018.2	40.4	80.8	45.4	74.3	-91.7	211.8	68.8	261	534.4	576.8	18.1	18.1	21.3	-19	28.3	-18	28.3	-17.4	30.1	540.4	1868
66	651.6	71.8	2382.4	171	18958	1768.6	-865.2	780.4	-2.7	80.8	54.3	67.1	-55.2	195.9	19.2	211	441.2	434.4	15.5	15.5	15.1	21.6	-11.7	25	382.4	1331.2	1312		
67	1321.6	103.1	2468	186.5	30848	1768.6	191.9	1018.6	36.5	113.1	13.8	82.4	-38.3	218.2	95.2	260.4	368.4	585.6	18.5	18.5	17.3	0.7	25.6	-38.7	27	-141.3	1721.6		
68	1777.6	144.6	6060.8	348.8	34918.4	2291.2	129.5	1324.6	-36.5	113.1	-18.2	82.4	-38.3	218.2	95.2	260.4	368.4	585.6	18.5	18.5	17.3	0.7	25.6	-38.7	27	-141.3	1721.6		
69	1169.6	97.5	3299.2	216.2	28390.4	1680	508.8	983.2	168	117.4	78.8	85	2.8	201	-32.7	170.7	247.4	287.4	16.3	16.3	14.2	18.5	-4.8	23	-498.4	831.2	831.2		
70	633.2	65.9	1618.6	183.8	8038.4	781.6	21	588.8	-11.8	141.4	78.8	85	2.8	201	-32.7	170.7	247.4	287.4	16.3	16.3	14.2	18.5	-4.8	23	-498.4	831.2	831.2		
71	17011.2	724.4	37248	1540.8	70400	4028.8	72.4	2050.8	148.8	488	151	354	-1037.8	940.8	428.8	687.6	1744	1172	18.8	18.8	34	68.4	70.1	-28.1	66.8	288.2	3468.2	3468.2	
72	4108.8	210.2	10201.6	470	33177.8	2048.4	378.8	1198.8	-138.1	201.8	29.1	150.2	-118.6	430.4	365	388.8	618.8	883.6	19.3	19.3	22.1	23.8	37.8	38.9	-38.9	38.1	-289	1977.6	1977.6
73	624.4	65.1	2336.8	150.5	13862.4	981.6	130.9	647.2	45.1	71.4	44.7	58.4	-162.8	168.6	205	176.2	-27.5	332.6	15.4	15.4	20.1	23.1	79.3	24.1	20.2	28	-228.8	1027.2	1027.2
74	1721.6	116	4838.4	284.2	30924.8	1739.2	608	1040.6	72.6	126.1	51.4	97.7	-43.8	278.4	267.8	282	114.8	552	15.9	15.9	0.4	18.2	28	3.8	30.9	177.6	1713.6	1713.6	
75	491.6	70.3	1784	156.9	21862.4	1472.8	60.5	952	11.5	78.8	78.3	64.9	-154.9	187.7	92.8	228.4	280	488.4	11.1	11.1	16.2	11.4	24.5	-17.7	28.6	639.2	1528.4	1528.4	
76	57.3	30.3	191.2	47.2	6332.8	547.2	-248.2	392.4	3.7	33.7	32	28.3	30.3	100.8	145.7	188.4	188.4	188.4	11.1	11.1	193.5	17.6	16.9	40.2	19.3	119.6	607.6	607.6	
77	1189.2	111.2	4158.6	214	29862	1931.2	198.5	1118	-32.5	120.9	31.1	97.3	-80.5	293.2	113.3	288.8	183.3	813.2	19.5	19.5	20.2	11.1	28.2	-5.8	33.3	-438	1878.8	1878.8	
78	204.6	38.2	975.2	91.8	3224	488.8	168.8	418	33.4	43.4	0.1	38.3	40.3	115.7	148	115.7	78.8	179.8	11.8	11.8	11.8	11.8	11.8	-11.8	17.5	-89.3	542.4	542.4	
79	2491.2	181	2284	431.6	48105.6	2848	516	1522.4	-88.1	193.1	-122.9	120.1	-89	283.2	267	387.8	633.8	859.2	22.8	22.8	24.8	37	39.1	-11.5	40.2	-544.8	2601.6	2601.6	
80	1257.6	108	1734.4	199.3	28598.4	1736	33.8	1027.2	-72.7	117.2	-5.1	83.7	23.7	210.2	-47	282.6	868.6	573.6	19.3	19.3	18.1	4.9	27.8	-12.3	31.6	28.3	1716.8	1716.8	
81	301.6	42.5	1273.6	68.6	2897.6	441.6	-233.2	377.8	-12.9	48.1	40.1	41	1.9	119.5	5.7	111.7	115.5	172.2	11.3	11.3	10.3	14.7	-4.2	17.7	14.7	14.7	14.7	617.2	617.2
82	891.2	97.5	4847.2	300.8	38604.8	2244.8	329.6	1288	-13.9	108.3	83.9	86.5	61.8	320.2	-39.5	332.4	1000.8	710	19.6	19.6	29.9	22.5	41	30.8	-28.1	32	1025.6	2156.8	2156.8
83	1028.6	111.8	3600	273.4	32844.8	2186.8	292.4	1278.8	3.6	123.3	12.2	89.3	258.8	312.2	-225	328.2	780.4	704	21.4	21.4	2.6	23	13.1	31.9	-28	34.7	139.5	1214.8	1214.8
84	368.6	52.4	1992	140.2	6812	712.8	-110.2	538	7.7	80.2	81.2	52.4	-98.1	181	150.8	159	219.4	265.2	11.1	11.1	193.5	17.6	16.9	40.2	19.3	119.6	607.6	607.6	
85	247.2	50	2465.6	165.2	6592	731.2	-231.2	544.8	12.4	57.8	12.3	54.4	-158.5	182.8	232.4	189.4	-88.3	813.2	14.5	14.5	12.1	18.6	-13.2	20.9	218.2	794	794	794	
86	563.6	72.9	2681.6	191.8	20275.2	1395.2	-516.4	884.8	0	61.9	4	68.5	-161	215.2	207	234.4	252	468.8	18	18	14.5	18.6	-6.8	22.2	2.4	812.4	812.4	812.4	
87	589.2	68.9	2473.8	172.8	18102.4	1172	135.8	1756.8	119.8	61.1	-7.8	85.8	-102	194.3	0.8	202.5	543.6	410	22.7	22.7	18.4	22.7	3	27.7	1180.8	1465.6	1465.6		
88	1282	112.2	6572.8	349	49088.8	2272	590.8	1255.2	-59.1	120.9	70.7	105.1	-315.8	342	262.8	338.2	361.6	898	14.6	14.6	14.8	10.3	22.3	1.7	25.7	-5.4	1212.8	1212.8	
89	181.5	34.7	510	82.8	5750.4	521.4	93.1	401	-53.2	37.5	31.4	-31.6	84.6	123	108.1	-3.2	187.5	187.5	18.9	18.9	19.5	14	11.1	17.7	-226	591.6	591.6		
90	471.6	58.2	977.6	95.8	12499.2	912	-753.6	588.4	32	63.8	-12.2	47.8	-10.5	128.2	47.6	157.7	264.4	318.8	13.2	13.2	6.8	15.1	19.5	16.1	23.1	768	981.6	981.6	

Table 4
1999 Illinois EPA - XRF Screening Data

Inspiration Mine - Galena, IL
April 6 and 8, 1999

Sample	Lead	Zinc	Iron	Chromium	Arsenic	Mercury	Copper	Nickel	Cobalt	Molybdenum	Zirconium	Strontium	Rubidium	Manganese																
TACO	400	61000	-	420	72	61	8200	141400	12000	-	-	-	-	-																
91	472.4	73.1	1574.4	158.8	17497.6	1364	94.7	691.2	18	83.4	14.2	87.7	-11.8	198.8	101.5	227.8	-28.5	451.2	17.9	--	18	9.5	25.8	-19.2	28.3	419.2	1432.8			
92	1843.2	163.7	11475.2	614	48742.4	3088	271.2	1571.2	35.8	173.9	36	155.3	-361.2	534.8	472	254.8	472	634.8	926.4	--	26.5	--	8.1	38.6	-29.6	43.1	-1868.8	2736		
93	628.4	97.2	7468.8	429.2	24480.8	1944	474.8	1189.6	41.8	113.5	110.3	116.8	-165.8	412	-1.1	352.6	742	655.6	14	23.4	--	22.6	18.1	33	-28	35.8	619.6	1981.6		
94	1544	108.2	1876.8	157.9	19366.4	1333.6	83.1	864.8	72.6	116	-27.6	80.5	-1.9	189.6	-7.6	219	610	457.6	--	16	25.2	18.6	--	24.4	-34.2	36.2	712	1368		
95	1025.6	91.4	2512	186.7	34227.2	1857.6	369.6	1040	128.3	104.2	-28.1	78.2	-17	217.6	-18.4	263.8	714.4	593.2	--	16.3	16.3	4	18.2	9.4	26.1	-16.7	27.6	-456.4	1772.6	
96	997.6	92.7	2272	183.3	26419.2	1678.4	360	1036.8	60.4	101.4	74.9	78.5	-44.5	217	91.8	264	587.2	583.6	--	17	--	17.6	9.9	28	-46.9	28.4	1854.4	1720		
97	1260.8	84.6	1413.6	120.3	13120	940.8	479.2	620	28.4	93	46.9	66.2	-88.8	144.7	103	165.8	131.4	325.2	--	1.7	13.7	54.9	17	4	21	7.2	24.6	-812.4	984.8	
98	795.2	84.9	9139.2	400	32179.2	1640	632.8	1092.8	-11.3	98.9	113.3	101.2	-182.4	372.2	285.2	315	216.2	584.8	--	17.4	17.4	18	19.1	0	25	-24.5	27.7	-187.8	1783.6	
99	-2.6	35.8	29.5	45.1	11033.6	807.2	175.5	557.6	20.2	38.5	-2.2	30.4	--	--	--	--	--	--	--	3.3	14.5	35.8	25.8	62.2	21.5	84.3	26.3	-82	863.2	
100	1208	90	1948.8	151.8	18498	1231.2	-284.4	810.4	70.8	98.9	-24	71.3	-63.5	178.3	102.6	202.7	266.4	414	--	14.8	43.9	18.2	1.3	22.6	-15.6	25.3	1340	1312.8		
101	1853.6	136.2	2348.8	200.3	33920	2022.4	645.2	1132.8	-162.7	139.6	21.5	28.1	-34.3	77	46.6	91.5	-103	157.2	--	1.7	10.3	27.3	11.7	--	13.7	3.7	16.3	214.8	518.6	
102	85.8	29.7	404.8	57.1	3929.6	444.4	-120	368.2	-20.9	32.8	6.9	98.8	93.3	238.2	-28.5	280.6	650	642	--	18.6	18.6	19	20.9	--	28.6	-15.8	33.9	-1142.4	1910.4	
103	824	65	1081.6	98.6	6783.6	729.6	-422.4	532.4	-75.1	70.1	28.4	50.4	-19	122.3	82.7	136.7	20.3	254	--	12	35.2	14.5	6.4	18.4	12.4	21.8	940.8	828		
104	1878.4	129.1	3282.4	241	23816	1702.4	-660	1054.4	33.3	139.2	2	102.2	-104	266.4	119.9	276	372	550.4	--	19.3	--	20.2	19.8	31.1	-33.9	31.4	1211.2	1758.4		
105	1247.2	100.9	2315.2	182.5	25702.4	1602.4	223.4	981.6	-18.6	105.4	-16.5	79.3	-11.6	214.4	87.7	247	284.2	520.4	--	5.4	17.4	3.3	18.4	--	24.8	-25.1	27.7	-46.6	1596	
107	789.6	92	3288.8	237.4	18828.8	1466.4	210.8	938.8	-46.8	101.4	12.9	94	-205.6	257.8	150.2	258.4	722	485.8	--	18.6	--	--	--	20.8	-35.9	29.9	-601.8	1507.2		
108	108.7	34	484.4	67.3	6393.6	598.4	197.5	452	-13.9	38.3	43.2	33.7	24.1	92.9	-18.8	113.2	153.6	217.8	--	--	--	10.5	--	13.7	6.4	16.7	173.3	542.8		
109	240.4	36.6	648	68.1	4428.8	478.8	-14.8	384.4	11.5	41.8	10.6	32.9	-55.7	86.5	26	100.8	236.4	183.4	--	0	10	--	--	--	--	--	--	-88	656	
110	867.2	98.7	2526.4	214.4	46798.8	2532.8	125.2	1370.4	-81.8	107.2	99.8	68	-25.6	255.8	354.8	333	284.4	739.2	--	20	11.6	21.8	8.9	29.4	-12	33.3	742	2360		
111	2260.6	134.3	5084.8	274	29209.6	1708.8	31.3	1016.6	-77.9	139	45.6	103.6	-101.6	282.6	21.4	271.2	488.4	654	--	--	--	24.6	20.2	25	29	-13.8	31.9	491.2	1894.4	
112	599.2	59	1955.2	133.3	10540.8	821.6	-120.8	548.8	-84.6	64.8	58.8	53.3	-27.2	153.7	23	153.3	330.8	284.8	--	12.1	12.1	32.3	14.9	18.9	19.2	-16.7	20.5	-127.8	868.4	
113	242	38.9	619.2	75.8	2520	399.6	-303.2	357	-18.3	41.1	11	33.1	-40.8	93.4	-5.8	98.4	219.8	160.3	--	7.2	10.4	3.4	10.7	--	13.1	5	16.6	547.8	488	
114	1468	95	3482.4	195.4	21030.4	1275.2	-1088.4	808	-30.1	102.3	37.3	77.2	-7	215	83.2	218.4	533.6	431.2	--	14.5	47.5	17.8	12.2	22.9	-8.4	25.6	2286.4	1357.6		
115	1375.2	91.3	3280	186.8	21657.6	1264	464.8	782	-10	98.6	0.2	73.4	-170.4	201.3	94	208.8	430.4	424.8	--	13.8	27	16.7	39.4	23.7	14.8	26.9	-274.8	1272.8		
116	1450.4	112.4	3456	229.4	28211.2	1734.4	349.8	1019.2	4.9	121.8	51.2	83.1	-230.8	248.8	231.4	273	394	663.2	--	--	--	15	20.3	44.2	26.7	-2.8	32.5	-428.8	1697.8	
117	275	37.5	540.4	63.8	5664	524	-49.2	392.2	-0.8	42.8	21	33.2	32.9	85.7	-75.8	100.4	284.2	186.5	--	--	--	6.7	10.7	--	13.1	-3.2	15.9	66.4	578	
118	1852.8	108.2	5113.6	246.2	21900.8	1314.4	-783.2	836.8	-78.2	113.6	12.2	84.4	-84.7	253.2	177.2	228.8	113.1	432	--	14.3	0.6	15.9	--	22.9	-4.4	26.8	1980.8	1393.6		
119	1720	113.8	4304	243.6	34816	1840	618.8	1031.2	61.2	123.7	52.2	84.6	-83.6	280.2	114.8	275.8	837.6	586.8	--	3.2	16.7	24.9	19.2	25.5	27	-25.6	28.6	-800	1747.2	
120	2022.4	118.2	6454.4	294.2	25088	1465.6	-283.8	878.4	-127.3	123	92.5	81.8	118.7	285.4	-158.1	249.8	434.8	483.8	--	--	--	15.1	17.7	16	18.6	28	-1.1	29.5	421.2	1475.2
121	73.2	31.6	506.8	68.6	6483.2	594	-3.7	435.6	0	36.2	25.2	31.8	-46.2	90.5	104.1	117.4	159.8	217.4	--	3.3	11.3	30.5	12.9	16	4	18.1	344.4	828.4		
122	838.6	65.2	3603.2	176.9	12678.4	884.8	-181.3	378	-10	72.7	42.5	60.7	-85.7	188.5	189	188.5	134	296.4	--	1.8	12	--	--	--	--	--	--	--	--	
123	124.7	27.8	620	59.7	3910.4	395.6	42.6	326	-18.8	31	29.9	26.9	-21.7	78.4	55.3	64.8	-18.5	143.9	--	2	9	38.7	10.7	--	12.2	4	14.4	38.8	452.4	
124	799.8	60.1	2772.8	145	7219.2	631.2	-271.4	461.2	-34.4	66.4	57.3	54	11	160.5	56.5	138.1	156.5	228.8	--	0.8	11	--	--	--	--	--	--	--	--	
125	1431.2	95.1	4332.8	224.2	23667.2	1356.8	-152.8	827.2	66.2	105	21.4	81.7	34	239	89.6	223.8	1.4	438.4	--	--	--	6.2	16	3.8	22.7	-16.7	25.2	497.6	1381.6	
126	141.9	35.5	780.4	75.6	6636.8	570.4	23.3	420	-6.9	39	17.2	32.7	29.5	98.5	-4	108.7	52.6	203.6	--	18.6	12.1	187.1	17.9	16.6	15.9	50.8	20.5	-42.3	624	
127	113.2	38.7	304.8	60.9	10547.2	771.2	200.7	540.8	1.9	42.6	20.5	34.4	-36.8	89.9	50.9	130.4	76.2	287.2	--	2.4	13.9	387.6	25.3	56.5	19.7	51.8	23.5	30.7	828.8	
128	541.6	53.7	3121.6	159.3	9785.6	749.2	41.6	533.6	-5	60.3	27.9	52.8	-114.9	171.8	154.8	133.8	134.8	285.6	--	9.7	12.1	22.3	13.3	--	18.7	5.2	19.9	271.8	918.4	
129	328.4	44.8	1368.4	101.5	10953.8	746	68.7	508.8	-3.6	50.1	3.4	40.5	-59.7	121.1	95.8	133.6	193.8	263	--	--	--	11.8	111.3	18.5	23.8	17.4	23.8	20.6	-82.8	793.6
130	222.8	42.6	900.8	88.2	11724.8	916.4	-38.5	548.4	23.5	48.3	16.9	39.5	-41.2	111.3	-30.3	137.3	325.4	287.8	--	0.2	12.9	207	20.3	48.5	19.1	40.2	22.5	231.6	869.6	
131	290.8	50.7	1211.2	111.5	13350.4	965.6	-684	660	28.9	57.9	27.1	48.2	-32.8	139.5	84.5	167.1	323.6	336.4	--	--	--	221.8	23.1	38.4	21.1	28.2	24.6	1673.6	1068	
132	350.2	49.3	1896.8	96.1	18995.2	1100	164.8	829.6	9.8	55.8	11.6	43.8	-44.2	121.7	-32.9	162.2	404.8	381.6	--	--	--	228.8								

Table 4
1999 Illinois EPA - XRF Screening Data

Sample	Lead	Zinc	Iron	Chromium	Arsenic	Mercury	Copper	Nickel	Cobalt	Molybdenum	Zirconium	Srionium	Rubidium	Manganese
TACO	400	61000	100000	100000	100000	100000	100000	100000	100000	100000	100000	100000	100000	100000
136	290.2	47.7	424.8	701	10073.6	778.6	295.6	559.6	47.6	51.2	25.5	39.1	25.3	39.1
137	109.7	42.2	304.4	61.2	9216	729.2	190.1	527.2	-18.7	48	30	36.2	-23.9	80.5
138	180.8	40.7	260.8	57.9	11104	782	-39.1	527.8	-39.8	43.6	28.1	34.2	-4.7	69
139	343.2	52.3	361.2	70.7	10022.4	928.6	-87.1	595.6	-53	56.3	35.4	42.7	2.8	104.9
140	192.6	43	281	60.1	6147.2	689.6	-87.4	508.6	-40.6	48	43.3	36.6	-56.7	87.2
141	109.2	41.2	544	76.3	12165.6	854.4	-139.2	559.6	8.3	45.7	49.3	39.2	-51.2	105.4
142	63.3	40.3	388.6	70.9	12582.4	903.2	-241.4	569	2.9	44.2	2.3	35.9	8.6	104.7
143	2636.6	121.3	3697.6	196.8	18150.4	1095.2	422.4	720.8	-8.8	125.1	32.3	87.8	-129.8	207.6
144	8800	342.6	5706.8	324.8	30498.6	1913.8	51.2	1195.2	121.1	285.6	-152	182.2	-108.1	331
145	2633.6	172.4	3462.4	262.4	59419.2	3036.8	415.2	1512	-21.6	175.5	-30.1	121.4	-67.5	292.2
146	764.4	67.5	2692.8	207.4	40166.4	2167.2	118.4	1194.4	-12	98.1	47.3	61.5	-169.7	237.2
147	883.2	91.9	1608.8	160.4	36899.6	2051.2	-670.6	1151.2	-11.7	102.1	48.3	71.7	-29.8	201.6
148	824.6	85.5	1399.2	146.1	36172.8	1984	470.8	1131.2	5.3	95.7	28.7	72.1	-85.4	198.9
149	2996.8	199.5	3971.2	528.8	65638.4	3523.2	377.8	1718.4	91	202.8	-335	477.8	-284.2	462
150	768	70.7	1221.6	114.7	14016	965.6	18.9	635.2	-80.6	76.1	6.8	55.1	-28.5	142.2
151	281	45.7	674	81.8	8748.8	737.2	-350	517.2	14.7	51.3	-5	39.5	-82.7	106.4
152	1177.6	110.8	8128	407	39091.2	2270.4	-178.3	1289.6	-10.3	123.2	151.5	115.6	-187.6	385.8
153	565.2	51.3	1488	106.4	9433.6	705.6	-8.1	498.4	-2.5	68.1	24.1	45.4	-52.8	127.9
154	1064.8	102.6	3048	228.6	26073.6	1761.6	-333	1080	53.3	114.9	4.6	89.4	-94.7	253.2
155	354.6	53.5	2321.6	152.7	19379.2	1172	-23.6	753.6	50.4	82.3	13.7	54.4	-13.2	172.5
156	959.2	69	1780.6	123.6	12691.2	863.2	-108.8	594	-41.4	75.6	49.2	54.5	-48.6	143.2
157	774	89.6	2339.6	196.2	41651.2	2282.4	500.8	1239.2	45.6	102	82.3	82.7	42.6	235.4
158	57.2	44	176.7	69	10771.2	969.6	-367.2	712	18.4	50.7	31.9	43.6	12.3	114.8
160	141	34.7	240.4	50.5	6854.4	576.4	98.2	440.4	-25	37.2	4.7	28.5	-25.8	75.8
161	95.4	32.5	149.5	44.4	8761.8	841.6	-62.9	440.8	-11.5	35.3	6.5	27.5	-14.5	68.8
162	211.6	41.3	1377.6	60.8	10828.8	804.8	-107.4	558	27.9	47.7	-6.5	36.1	-39.7	109.5
163	295.4	36.5	1377.6	60.8	10828.8	804.8	-107.4	558	27.9	47.7	-6.5	36.1	-39.7	109.5
164	591.6	42	1514.4	86.6	2921.6	348.4	-379.8	266.6	-33.8	46.6	31.3	36.2	50.3	101.9
165	1445.6	71.6	1422.2	96.1	6553.6	553.2	-278	420	18.8	77.9	12.8	52.3	-31.6	111.7
166	1008.6	71	1486.4	115	7855.2	710	-612	520	-18.7	77.9	12.8	52.3	-31.6	111.7
167	224.8	44.6	311.8	63.6	7667.2	690.8	-287.8	518.8	-30.1	48.5	19.1	56.1	-1.5	138.3
168	31.9	34.2	211	59.7	2532.8	476	-182.8	463.8	10.7	39.8	15.7	34.5	0.8	92.6
169	5484.8	214.2	12057.6	447.2	13312	1094.4	-473.8	802	-4.3	200.3	185.5	145.5	114.7	397.4
170	1928	120	4544	250.2	23270.4	1472	-652.4	922.4	60.5	129	-31.9	95	-32	264.6
171	256	42.1	290.6	56	7891.2	664.4	-651.6	487.2	-19.1	46.8	49.4	36.8	-25.3	86.2
172	136.5	36.3	268.8	53.8	6422.4	577.6	-248.4	438.6	2	40	16.2	31.4	0.9	80.6
173	45.4	35.5	69.2	46.4	6012.8	603.2	-278.6	472.4	-0.2	39	22	32	-40.8	78.4
174	369.8	45.1	703.6	77.3	11398.4	768.8	-73.8	571.2	-1.5	50.9	36.2	39.7	51.4	104.8
175	98.6	42.7	247.6	65.5	8562.4	783.2	-27.5	568.8	-12.9	46.5	29.6	38.3	53.3	102.2
176	165.1	38.8	278.6	58.5	10284.8	750.8	-290.6	509.2	-18.8	42.6	23.2	33.6	-56.5	80.9
177	128.1	39.5	280.8	59.7	11616.6	790.8	-171.9	535.6	4.2	43	-7.2	32.8	0.2	91
178	2593.6	120	4659.6	218.4	10278.4	835.2	-50.4	623.6	-125.8	122.3	114	89.3	45.1	272.2
179	205.8	42.2	244.2	57.9	8576	715.2	1.1	532.8	9.7	47.6	-43	37.8	-18.8	68
180	98	38.4	442.8	71.5	10323.2	801.2	-383.4	589.2	0	43.4	43.5	37.8	-8.6	100.8

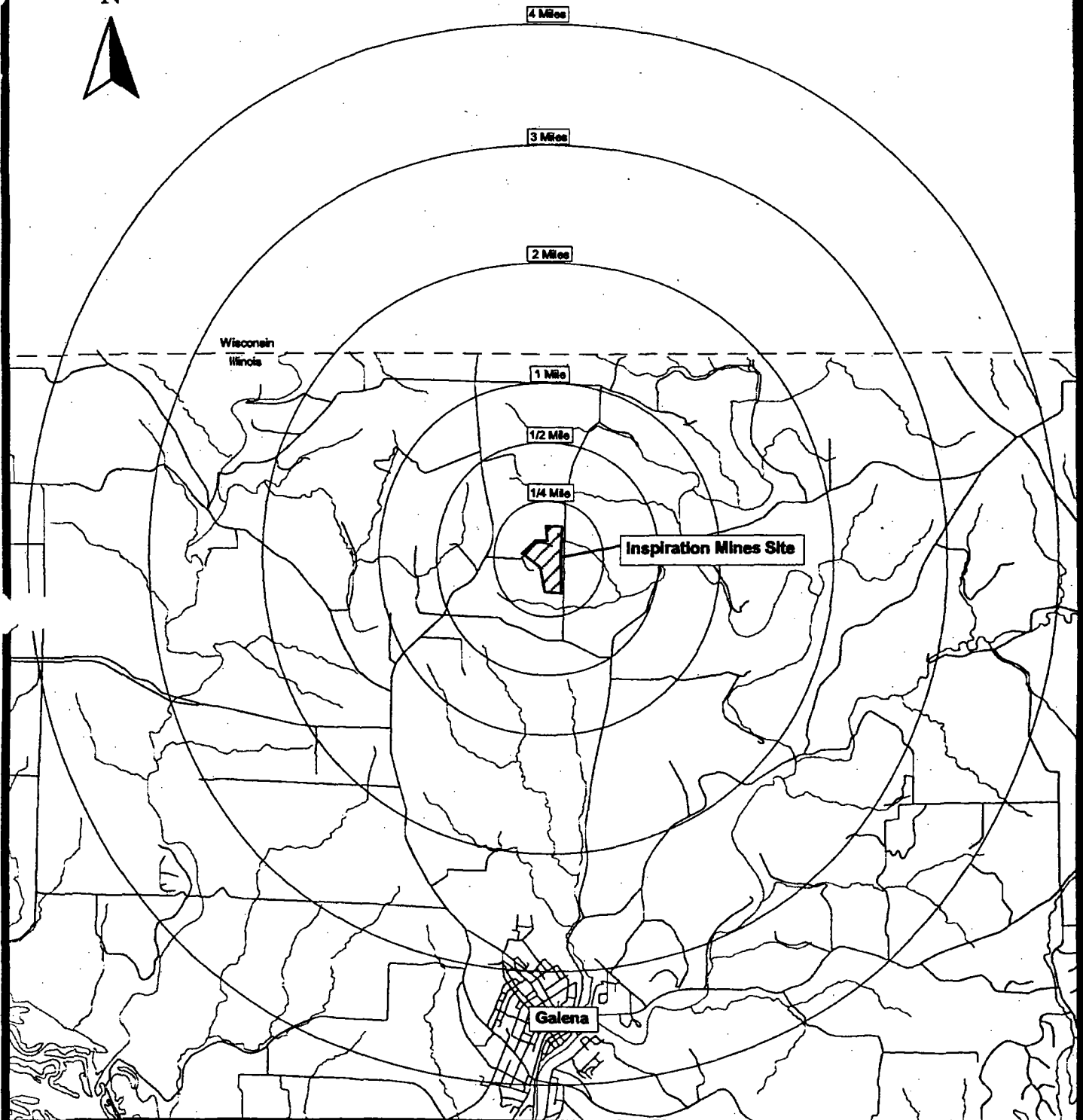
Inspiration Mine - Galena, IL
April 5 and 6, 1999

Table 4
1999 Illinois EPA - XRF Screening Data

Sample	Lead	Zinc	Iron	Chromium	Arsenic	Mercury	Copper	Nickel	Cobalt	Molybdenum	Zirconium	Strontium	Rubidium	Manganese	+/-
TACO	400	61000	10000	420	7.2	81	8200	4100	12000						
181	482.8	58.4	1702.4	127.5	14515.2	985.6	55.7	153	180.2	154.3	317.8	56.4	21.6	35.9	24.9
182	6313.6	199.3	6803.2	263.4	10892.8	841.6	332.2	622	187.5	187.5	303.6	21.2	28.3	49.4	27.9
183	2500.8	135.5	10937.6	420	12710.4	1077.6	2.1	141.7	84	116	373	211.2	265.8	184.8	383.2
184	48.7	34.2	246.8	57	11033.6	778.8	261.4	555.6	21.9	38.8	37.3	68.7	87.8	122.6	259.8
185	503.6	40.8	815.6	67.7	1089.6	409.2	183.5	328.6	27.8	45.4	61.9	152	8.7	9.1	10.4
186	338	59.7	992	115.5	19008	1281.8	4.5	53.5	13	153.4	56.3	203.5	378	432.4	8.8
187	111.9	42.8	593.8	84.7	10803.2	878	60.4	634.8	28.2	46.7	48.3	41.2	34.2	118.4	95.5
188	130.4	41.4	699	84.9	10272	807.8	2.2	45.9	15.9	38.6	39.7	112.5	58.2	142.2	87.9
189	10822.4	382.2	1382.4	546	23052.8	1572	169.1	1077.6	208.4	308.2	285.8	212.6	402.4	478.4	115.1
190	468.4	41	982.4	75.3	2624	356.8	384	315.6	35.1	45.3	19.6	34.4	51.1	92.7	38.5
191	753.2	48.9	1408	87.7	4204.8	421.8	284.8	345.4	14.7	54.2	7.7	39.8	8.4	154	10.2
192	1654.4	82.5	2204.8	182.9	12582.4	820	296.4	546.8	32.5	88.6	57.4	68	45.9	191.5	18.4
193	2144	118.2	2884.8	176	14707.2	1079.2	872.8	753.8	14.9	124.1	2	85.8	47.3	188.3	184
194	518.4	51.3	1148.8	93.3	9708.8	709.2	485.2	494.4	19.9	57.5	19.2	43.7	85.2	112	78.6
195	338.8	30.2	1396.8	74.1	2507.2	280.8	224	251.8	18.1	34.1	33.3	28.6	40.5	87	47.9
196	62	404.8	602112	79104	132198	22182	2014.4	10521.6	535.2	802.4	2881.6	2435	9878.8	11360	4264.4
197	778	86.1	1625.6	169.2	20492.8	1469.6	694.4	948.8	5.1	95.5	12.4	72.2	98.1	207	19.6
198	714.8	57.3	1640	110.8	6976	617.6	438	489.6	54.4	62.2	11.5	48.6	14	130.1	86
199	122.7	40.9	960	98.5	8076.8	735.6	44.8	559.2	10.7	46.7	38.3	42.1	38.3	128.9	82
200	100.6	37	548.4	73.1	8000	677.2	351.6	479.2	11.1	40.7	13.9	34.3	44.3	98.1	125.5
201	187	38.3	365.6	74.2	5475.2	675.2	581.2	581.2	16.5	41.7	3.3	38.4	57.7	107.1	86.9
202	115.8	47.2	1320.8	125.6	15308.8	1108.8	544.4	753.8	34.2	54.6	39.9	50.4	36.3	158.7	104.3
203	51.1	34.1	188.4	51.8	6444.8	591.6	301.8	452.4	6.9	36.5	7.3	28.6	8.3	80.3	12.2
204	181.4	39.2	379	62.9	6707.2	607.6	115.8	481.2	3.1	42.8	24.7	31.8	2.4	90	6
205	453.6	51.4	855.2	66.1	8441.6	690.4	175.9	511.8	5.1	56.9	23.9	61.4	39.4	112.1	15.1
206	968.4	80.1	1315.2	122.7	9812.8	870.4	431.2	652	77.1	85.7	23.9	61.4	39.4	112.1	15.1
207	90.4	30.8	141.6	41.5	6188.8	527.6	35.6	404.4	32.7	33.2	18	28.3	79.5	62.2	18.4
208	324.8	38.6	531.6	61.2	4028.8	435.6	4.8	357.2	42.8	42.1	26.4	32	30.8	81.6	52.5
209	688.4	54.4	885.6	91.3	8555.2	762.4	236.8	572.8	41.2	59.3	53.7	48	52.8	120.4	40.4
210	955.2	59.2	938.8	95.1	11808	855.2	488	594.4	31.8	68.6	15.8	49.2	18.3	122.1	78
211	1447.2	118.4	4144	267.8	30387.2	1910.4	194	1153.6	84.9	128.7	60.2	99.6	77.9	285.6	7.8
212	2398.4	149.5	4457.6	275	43264	2315.2	449.6	1321.6	104.9	157.6	35.8	115.1	87.2	284.2	139.5
213	995.2	118.3	2616	242.6	41497.6	2856	1219.2	1501.6	77.8	132.2	100	108.9	87.4	285.6	61.4
214	1213.6	116.4	3276.8	252.8	42625.2	2488	668.4	1390.4	42.9	128.9	26	100.3	103.2	289	74.5
215	160.3	55.5	538	98.6	14144	1188.8	524.8	833.8	22.1	48.9	52.4	49.8	93.4	128.9	77.8
216	119	43.9	543.2	80.1	13698	960	874.4	833.8	47.9	128.9	52.4	49.8	93.4	128.9	77.8
217	4003.2	352.8	107520	5712	55091.2	4788.4	1643.2	2740.8	80	349.6	105.8	482.8	802.4	2113.6	456.4
218	19200	1153	117146	6339.2	96409.6	7040	2921.6	3306.8	205.8	695.2	675.6	627.6	1334.4	2230.4	438.4
219	210	60.1	3728	241.2	23208.4	1569.6	130.8	1002.4	57.8	71.9	50.7	74.1	180.3	268.4	28.6
220	3427.2	205	4316.8	304.4	21212.8	1976	509.2	1217.6	48.7	204.1	55.7	142.8	18.5	332.2	48.9
221	456.4	73.4	2798.4	211.2	4870.4	788.8	675.2	673.2	38.6	84.4	11.6	72.9	8.8	239.2	37.1

Appendix A

4-MILE RADIUS MAP

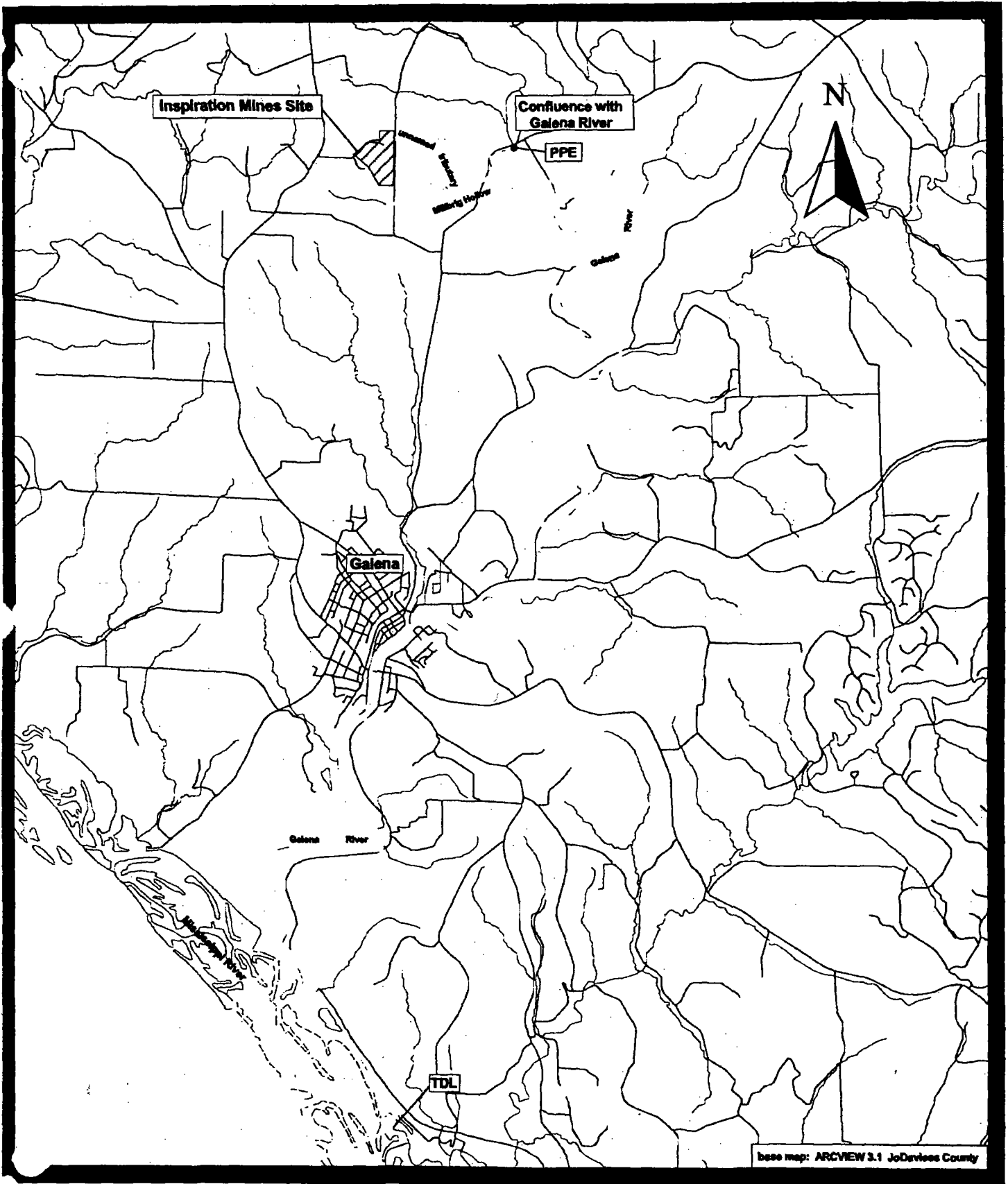


Map Scale

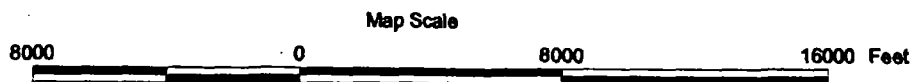


base map: ARCVIEW 3.1 JoDavless County

15-Mile Surface Water Map



base map: ARCVIEW 3.1 JoDeVries County



Appendix B

TARGET COMPOUND LIST

Volatile Target Compounds

Chloromethane	1,2-Dichloropropane
Bromomethane	cis-1,3-Dichloropropene
Vinyl Chloride	Trichloroethene
Chloroethane	Dibromochloromethane
Methylene Chloride	1,1,2-Trichloroethane
Acetone	Benzene
Carbon Disulfide	trans-1,3-Dichloropropene
1,1-Dichloroethene	Bromoform
1,1-Dichloroethane	4-Methyl-2-pentanone
1,2-Dichloroethene (total)	2-Hexanone
Chloroform	Tetrachloroethene
1,2-Dichloroethane	1,1,2,2-Tetrachloroethane
2-Butanone	Toluene
1,1,1-Trichloroethane	Chlorobenzene
Carbon Tetrachloride	Ethylbenzene
Vinyl Acetate	Styrene
Bromodichloromethane	Xylenes (total)

Base/Neutral Target Compounds

Hexachloroethane	2,4-Dinitrotoluene
bis(2-Chloroethyl) Ether	Diethylphthalate
Benzyl Alcohol	N-Nitrosodiphenylamine
bis (2-Chloroisopropyl) Ether	Hexachlorobenzene
N-Nitroso-Di-n-Propylamine	Phenanthrene
Nitrobenzene	4-Bromophenyl-phenylether

Hexachlorobutadiene	Anthracene
2-Methylnaphthalene	Di-n-Butylphthalate
1,2,4-Trichlorobenzene	Fluoranthene
Isophorone	Pyrene
Naphthalene	Butylbenzylphthalate
4-Chloroaniline	bis(2-Ethylhexyl)Phthalate
bis(2-chloroethoxy)Methane	Chrysene
Hexachlorocyclopentadiene	Benzo(a)Anthracene
2-Chloronaphthalene	3-3'-Dichlorobenzidene
2-Nitroaniline	Di-n-Octyl Phthalate
Acenaphthylene	Benzo(b)Fluoranthene
3-Nitroaniline	Benzo(k)Fluoranthene
Acenaphthene	Benzo(a)Pyrene
Dibenzofuran	Ideno(1,2,3-cd)Pyrene
Dimethyl Phthalate	Dibenz(a,h)Anthracene
2,6-Dinitrotoluene	Benzo(g,h,i)Perylene
Fluorene	1,2-Dichlorobenzene
4-Nitroaniline	1,3-Dichlorobenzene
4-Chlorophenyl-phenylether	1,4-Dichlorobenzene

Acid Target Compounds

Benzoic Acid	2,4,6-Trichlorophenol
Phenol	2,4,5-Trichlorophenol
2-Chlorophenol	4-Chloro-3-methylphenol
2-Nitrophenol	2,4-Dinitrophenol
2-Methylphenol	2-Methyl-4,6-dinitrophenol
2,4-Dimethylphenol	Pentachlorophenol
4-Methylphenol	4-Nitrophenol
2,4-Dichlorophenol	

Pesticide/PCB Target Compounds

alpha-BHC	Endrin Ketone
beta-BHC	Endosulfan Sulfate
delta-BHC	Methoxychlor
gamma-BHC (Lindane)	alpha-Chlordane
Heptachlor	gamma-Chlordane
Aldrin	Toxaphene
Heptachlor epoxide	Aroclor-1016
Endosulfan I	Aroclor-1221
4,4'-DDE	Aroclor-1232
Dieldrin	Aroclor-1242
Endrin	Aroclor-1248
4,4'-DDD	Aroclor-1254
Endosulfan II	Aroclor-1260
4,4'-DDT	

TARGET ANALYTE LIST

Inorganic Compounds

Aluminum	Manganese
Antimony	Mercury
Arsenic	Nickel
Barium	Potassium
Beryllium	Selenium
Cadmium	Silver
Calcium	Sodium
Chromium	Thallium
Cobalt	Vanadium
Copper	Zinc
Iron	Cyanide
Lead	Sulfide
Magnesium	

List of PNA's from Target Compound List

Naphthalene

2-Methylnaphthalene

2-Chloronaphthalene

Acenaphthylene

Acenaphthene

Fluorene

Phenanthrene

Anthracene

Fluoranthene

Pyrene

Benzo(a)anthracene

Chrysene

Benzo(b)fluoranthene

Benzo(k)fluoranthene

Benzo(a)pyrene

Indeno(1,2,3-cd)pyrene

Dibenz(a,h)anthracene

Benzo(g,h,i)perylene

Appendix C

SITE NAME: INSPIRATION MINES

CERCLIS ID: ILD 980905202

COUNTY: JO DAVIESS

DATE: APRIL 20, 1999

TIME: 10:00 a.m.

PHOTO BY: Brad Taylor

SAMPLE: G201

DIRECTION: West

COMMENTS: Photo taken of residential ground water well west of mine. Timme property.



DATE: April 20, 1999

TIME: 10:00 a.m.

PHOTO BY: Brad Taylor

SAMPLE: G201

DIRECTION: North

COMMENTS: Photo taken of residential ground water well west of mine. Timme property.



SITE NAME: INSPIRATION MINES

CERCLIS ID: ILD 980905202

COUNTY: JO DAVIESS

DATE: April 20, 1999

TIME: 10:30 a.m.

PHOTO BY: Brad Taylor

SAMPLE: G202

DIRECTION: West

COMMENTS: Photo taken of residential ground water well located southeast of mine.



DATE: April 20, 1999

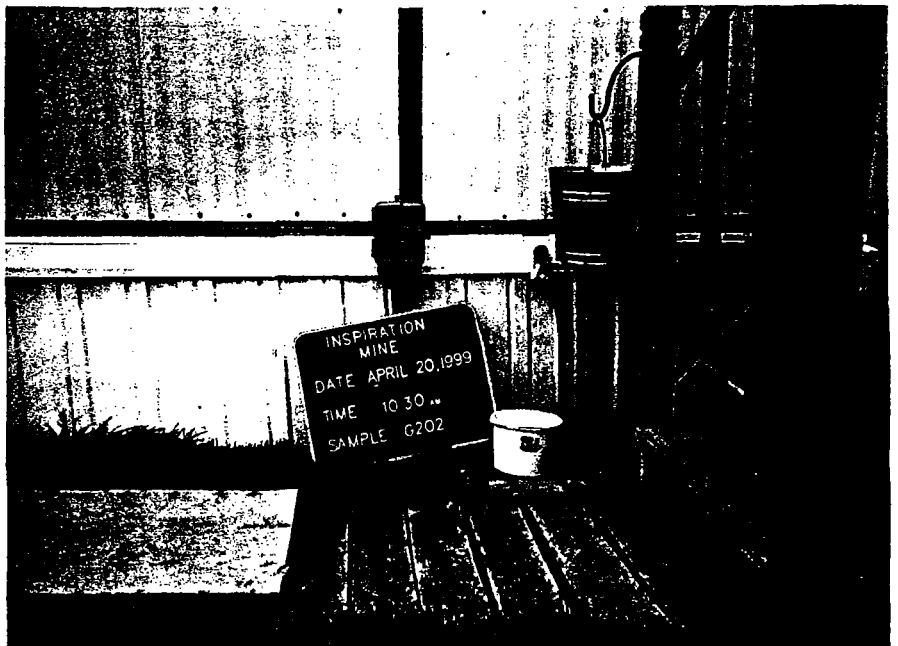
TIME: 10:30 a.m.

PHOTO BY: Brad Taylor

SAMPLE: G202

DIRECTION: North

COMMENTS: Photo taken of residential ground water well located southeast of mine.



SITE NAME: INSPIRATION MINES

CERCLIS ID: ILD 980905202

COUNTY: JO DAVIESS

DATE: April 20, 1999

TIME: 11:10 a.m.

PHOTO BY: Brad Taylor

SAMPLE: G203/G204

DIRECTION: North

COMMENTS: Photo taken of residential ground water well east of mine. Gotto property.



DATE: April 20, 1999

TIME: 11:10 a.m.

PHOTO BY: Brad Taylor

SAMPLE: G203/G204

DIRECTION: West

COMMENTS: Photo taken of residential ground water well east of mine. Gotto property.



SITE NAME: INSPIRATION MINES

CERCLIS ID: ILD 980905202

COUNTY: JO DAVIESS

DATE: April 20, 1999

TIME: 1:00 p.m.

PHOTO BY: Brad Taylor

SAMPLE: G104

DIRECTION: West

COMMENTS: Photo taken of ground water sample obtained with Agency Geoprobe.



DATE: April 20, 1999

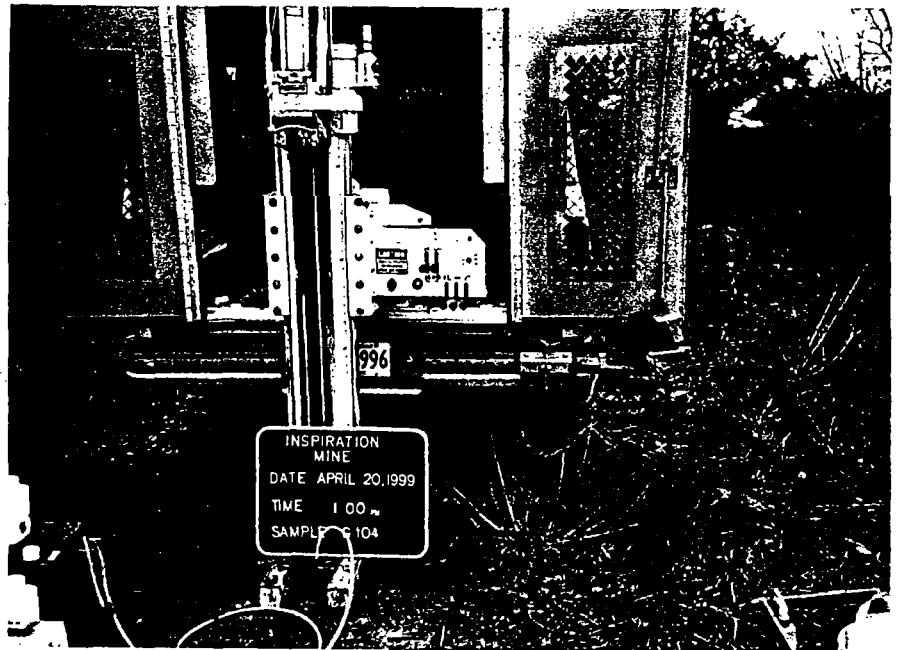
TIME: 1:00 p.m.

PHOTO BY: Brad Taylor

SAMPLE: G104

DIRECTION: North

COMMENTS: Photo taken of ground water sample obtained with Agency Geoprobe.



SITE NAME: INSPIRATION MINES

CERCLIS ID: ILD 980905202

COUNTY: JO DAVIESS

DATE: April 21, 1999

TIME: 10:00 a.m.

PHOTO BY: Brad Taylor

SAMPLE: X101

DIRECTION: North

**COMMENTS: Photo taken
of residential soil
sample east of mine.**



DATE: April 21, 1999

TIME: 10:00 a.m.

PHOTO BY: Brad Taylor

SAMPLE: X101

DIRECTION: West

**COMMENTS: Photo taken
of residential soil
sample east of mine.**



SITE NAME: INSPIRATION MINES

CERCLIS ID: ILD 980905202

COUNTY: JO DAVIESS

DATE: April 20, 1999

TIME: 4:30 p.m.

PHOTO BY: Brad Taylor

SAMPLE: X102

DIRECTION: North

COMMENTS: Photo taken of soil sample in former lagoon area on mine property.



DATE: April 21, 1999

TIME: 4:30 p.m.

PHOTO BY: Brad Taylor

SAMPLE: X102

DIRECTION: East

COMMENTS: Photo taken of soil sample in former lagoon area on mine property.



SITE NAME: INSPIRATION MINES

CERCLIS ID: ILD 980905202

COUNTY: JO DAVIESS

DATE: April 20, 1999

TIME: 1:30 p.m.

PHOTO BY: Brad Taylor

SAMPLE: X103

DIRECTION: North

COMMENTS: Photo taken of soil sample collected by Agency Geoprobe in former lagoon area on mine property.



DATE: April 20, 1999

TIME: 1:30 p.m.

PHOTO BY: Brad Taylor

SAMPLE: X103

DIRECTION: West

COMMENTS: Photo taken of soil sample collected by Agency Geoprobe on mine property.



SITE NAME: INSPIRATION MINES

CERCLIS ID: ILD 980905202

COUNTY: JO DAVIESS

DATE: April 20, 1999

TIME: 4:40 p.m.

PHOTO BY: Brad Taylor

SAMPLE: X104 & X103T

DIRECTION: North

COMMENTS: Photo taken of soil sample east of former lagoon on mine property.



DATE: April 20, 1999

TIME: 4:40 p.m.

PHOTO BY: Brad Taylor

SAMPLE: X104 & X103T

DIRECTION: West

COMMENTS: Photo taken of soil sample east of former lagoon on mine property.



SITE NAME: INSPIRATION MINES

CERCLIS ID: ILD 980905202

COUNTY: JO DAVIESS

DATE: April 20, 1999

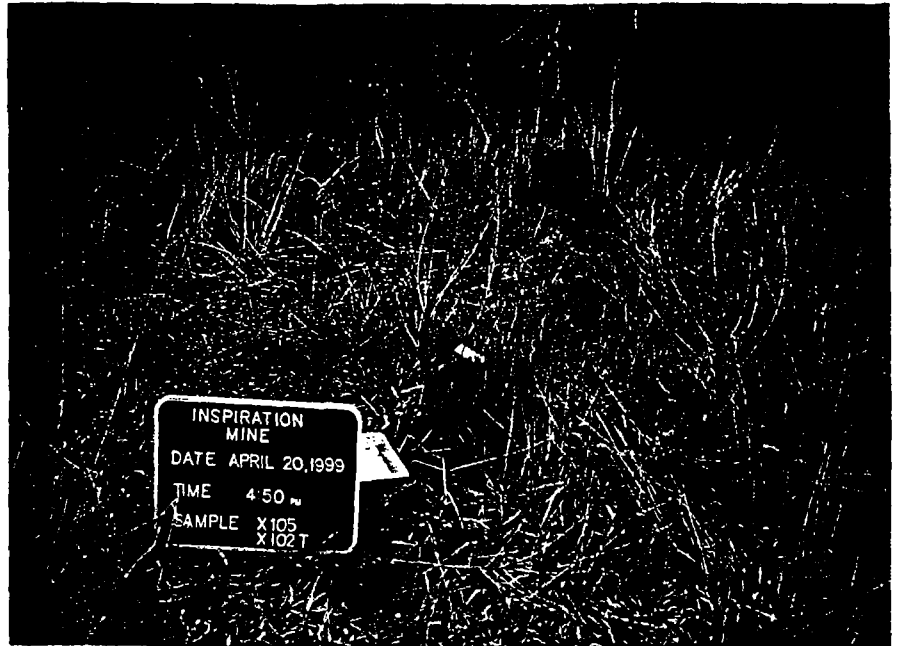
TIME: 4:50 p.m.

PHOTO BY: Brad Taylor

SAMPLE: X105 & X102T

DIRECTION: North

**COMMENTS: Photo taken
of soil sample near
former process area.**



DATE: April 20, 1999

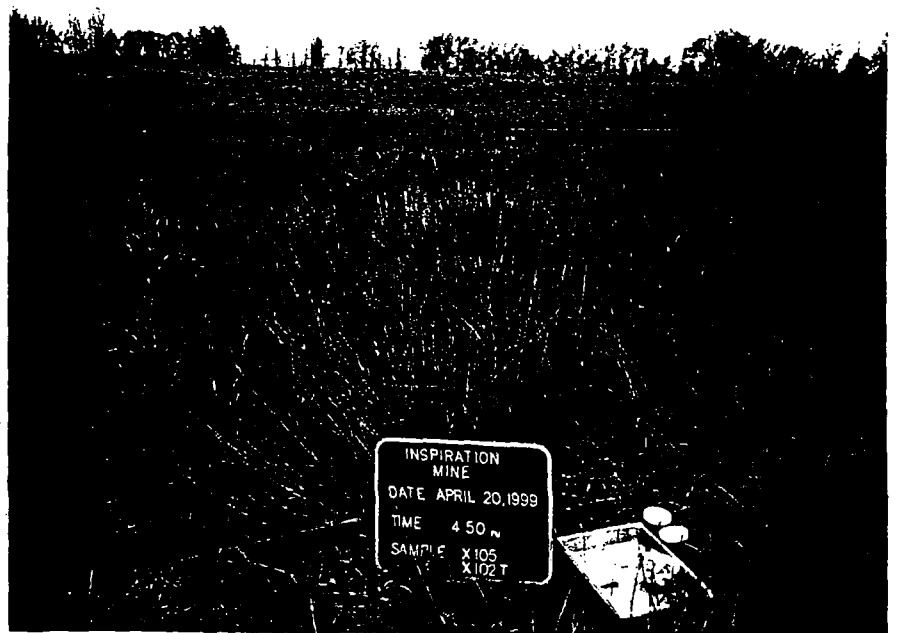
TIME: 4:50 p.m.

PHOTO BY: Brad Taylor

SAMPLE: X105 & X102T

DIRECTION: West

**COMMENTS: Photo taken
of soil sample near
former process area.**



SITE NAME: INSPIRATION MINES

CERCLIS ID: ILD 980905202

COUNTY: JO DAVIESS

DATE: April 21, 1999

TIME: 8:20 a.m.

PHOTO BY: Brad Taylor

SAMPLE: X106 & X104T

DIRECTION: West

COMMENTS: Photo taken of soil sample point located on berm of recontoured tailings pile.



DATE: April 21, 1999

TIME: 8:20 a.m.

PHOTO BY: Brad Taylor

SAMPLE: X106 & X104T

DIRECTION: South

COMMENTS: Photo taken of soil sample point located on berm of recontoured tailings pile.



SITE NAME: INSPIRATION MINES

CERCLIS ID: ILD 980905202

COUNTY: JO DAVIESS

DATE: April 21, 1999

TIME: 9:30 a.m.

PHOTO BY: Brad Taylor

SAMPLE: X107

DIRECTION: North

COMMENTS: Photo taken of soil sample collected from residential yard west of mine.



DATE: April 21, 1999

TIME: 9:30 a.m.

PHOTO BY: Brad Taylor

SAMPLE: X107

DIRECTION: West

COMMENTS: Photo taken of soil sample collected from residential yard west of mine.



SITE NAME: INSPIRATION MINES

CERCLIS ID: ILD 980905202

COUNTY: JO DAVIESS

DATE: April 21, 1999

TIME: 8:40 a.m.

PHOTO BY: Brad Taylor

SAMPLE: X108/X109
& X105T

DIRECTION: South

COMMENTS: Photo taken
of soil sample
collected from
southern portion of
recontoured pile.



DATE: April 21, 1999

TIME: 8:40 a.m.

PHOTO BY: Brad Taylor

SAMPLE: X108/X109
& X105T

DIRECTION: North

COMMENTS: Photo taken
of soil sample
collected from
southern portion of
recontoured pile.



SITE NAME: INSPIRATION MINES

CERCLIS ID: ILD 980905202

COUNTY: JO DAVIESS

DATE: April 21, 1999

TIME: 9:00 a.m.

PHOTO BY: Brad Taylor

SAMPLE: X110

DIRECTION: North

COMMENTS: Photo taken of soil sample collected south of former pile.



DATE: April 21, 1999

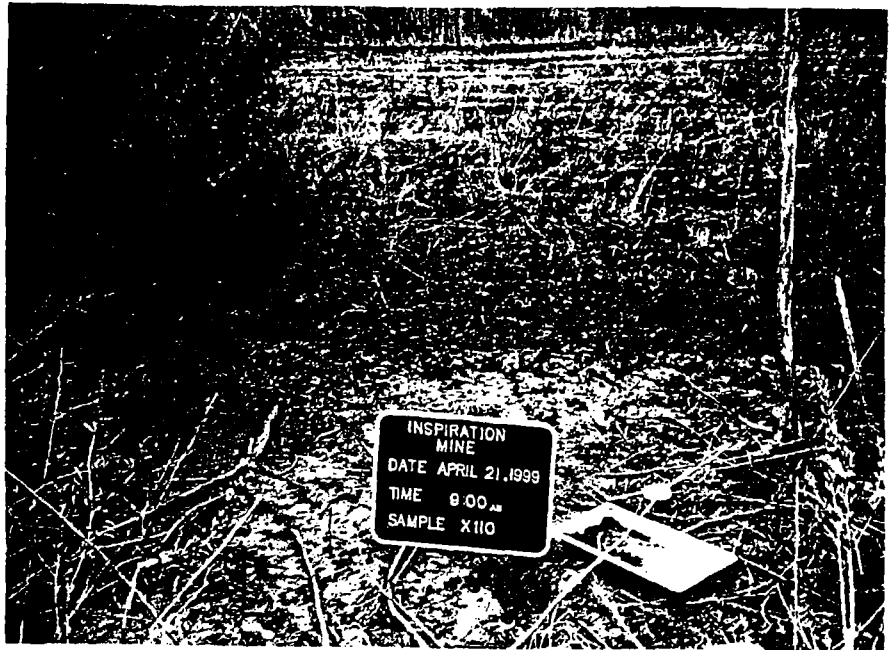
TIME: 9:00 a.m.

PHOTO BY: Brad Taylor

SAMPLE: X110

DIRECTION: South

COMMENTS: Photo taken of soil sample collected south of former pile.



SITE NAME: INSPIRATION MINES

CERCLIS ID: ILD 980905202

COUNTY: JO DAVIESS

DATE: April 20, 1999

TIME: 3:30 p.m.

PHOTO BY: Brad Taylor

SAMPLE: X111 & X101T

DIRECTION: North

COMMENTS: Photo taken of soil sample collected from former zinc & lead storage pad area.



DATE: April 20, 1999

TIME: 3:30 p.m.

PHOTO BY: Brad Taylor

SAMPLE: X111 & X101T

DIRECTION: East

COMMENTS: Photo taken of soil sample collected from former zinc & lead storage pad area.



SITE NAME: INSPIRATION MINES

CERCLIS ID: ILD 980905202

COUNTY: JO DAVIESS

DATE: April 20, 1999

TIME: 2:20 p.m.

PHOTO BY: Brad Taylor

SAMPLE: X201

DIRECTION: North

COMMENTS: Photo taken of sediment sample collected in the unnamed tributary north of the former pile.



DATE: April 20, 1999

TIME: 2:20 p.m.

PHOTO BY: Brad Taylor

SAMPLE: X201

DIRECTION: West

COMMENTS: Photo taken of sediment sample collected in the unnamed tributary north of the former pile.



SITE NAME: INSPIRATION MINES

CERCLIS ID: ILD 980905202

COUNTY: JO DAVIESS

DATE: April 20, 1999

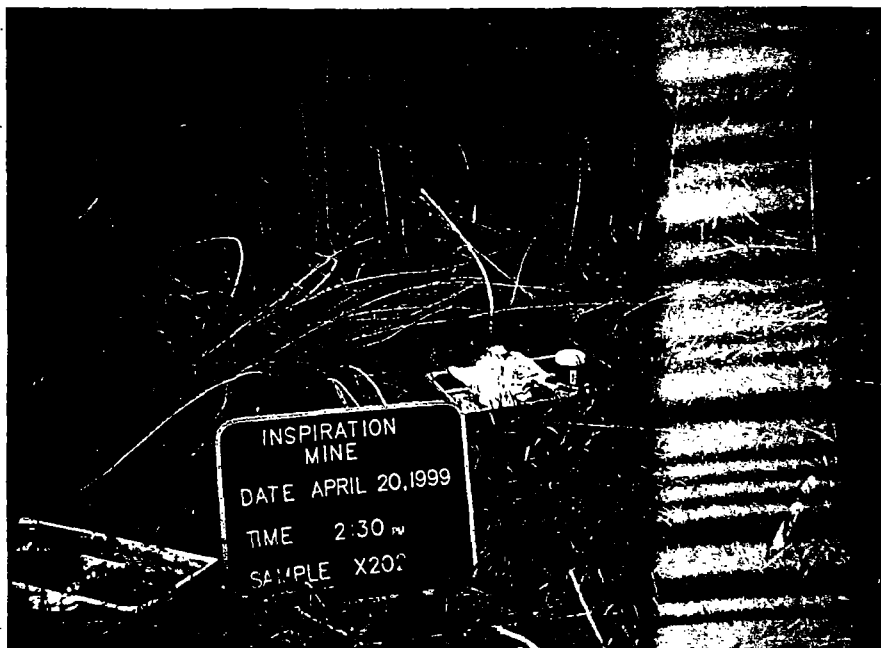
TIME: 2:30 p.m.

PHOTO BY: Brad Taylor

SAMPLE: X202

DIRECTION: North

COMMENTS: Photo taken of sediment sample collected in the unnamed tributary north of the former pile.



DATE: April 20, 1999

TIME: 2:30 p.m.

PHOTO BY: Brad Taylor

SAMPLE: X202

DIRECTION: East

COMMENTS: Photo taken of sediment sample collected in the unnamed tributary north of the former pile.



SITE NAME: INSPIRATION MINES

CERCLIS ID: ILD 980905202

COUNTY: JO DAVIESS

DATE: April 21, 1999

TIME: 12:20 p.m.

PHOTO BY: Brad Taylor

SAMPLE: X203

DIRECTION: North

COMMENTS: Photo taken of sediment sample collected in drainage way, south of former pile, leading to Millbrig Hollow.



DATE: April 21, 1999

TIME: 12:20 p.m.

PHOTO BY: Brad Taylor

SAMPLE: X203

DIRECTION: East

COMMENTS: Photo taken of sediment sample collected in drainage way, south of former pile, leading to Millbrig Hollow.



SITE NAME: INSPIRATION MINES

CERCLIS ID: ILD 980905202

COUNTY: JO DAVIESS

DATE: April 21, 1999

TIME: 12:00 p.m.

PHOTO BY: Brad Taylor

SAMPLE: X204

DIRECTION: North

COMMENTS: Photo taken of sediment sample collected in drainage way, in pasture south of former pile, leading to Millbrig Hollow.



DATE: April 21, 1999

TIME: 12:00 p.m.

PHOTO BY: Brad Taylor

SAMPLE: X204

DIRECTION: East

COMMENTS: Photo taken of sediment sample collected in drainage way, in pasture south of former pile, leading to Millbrig Hollow.



SITE NAME: INSPIRATION MINES

CERCLIS ID: ILD 980905202

COUNTY: JO DAVIESS

DATE: April 21, 1999

TIME: 11:50 a.m.

PHOTO BY: Brad Taylor

SAMPLE: X205/X206

DIRECTION: West

COMMENTS: Photo taken of sediment sample collected in Millbrig Hollow east of Meridian Road.



DATE: April 21, 1999

TIME: 11:50 a.m.

PHOTO BY: Brad Taylor

SAMPLE: X205/X206

DIRECTION: North

COMMENTS: Photo taken of sediment sample collected in Millbrig Hollow east of Meridian Road.



SITE NAME: INSPIRATION MINES

CERCLIS ID: ILD 980905202

COUNTY: JO DAVIESS

DATE: April 21, 1999

TIME: 11:15 a.m.

PHOTO BY: Brad Taylor

SAMPLE: X207

DIRECTION: West

COMMENTS: Photo taken of sediment sample collected in tributary to Millbrig Hollow, SE of mine.



DATE: April 21, 1999

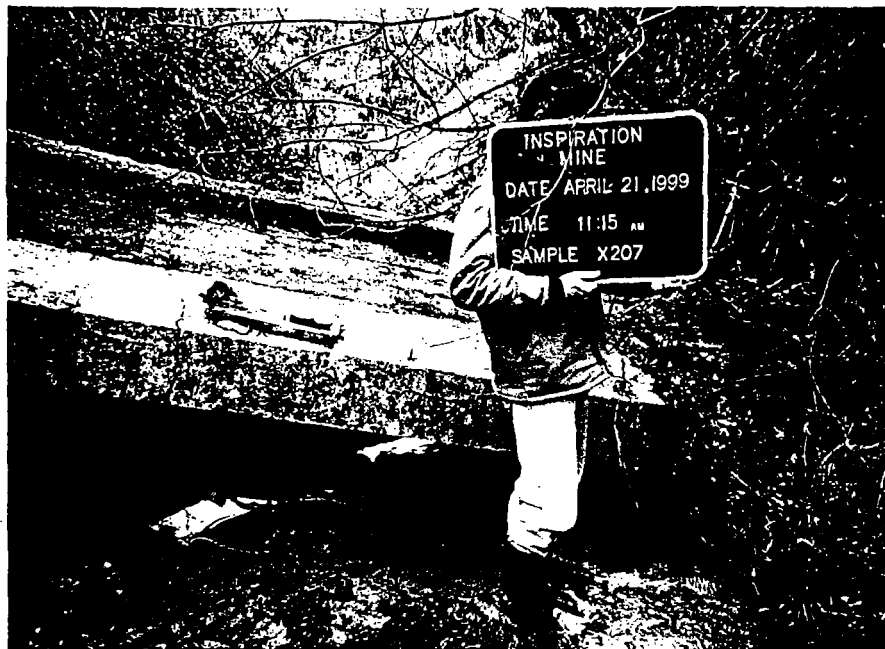
TIME: 11:15 a.m.

PHOTO BY: Brad Taylor

SAMPLE: X207

DIRECTION: North

COMMENTS: Photo taken of sediment sample collected in tributary to Millbrig Hollow, SE of mine.



SITE NAME: INSPIRATION MINES

CERCLIS ID: ILD 980905202

COUNTY: JO DAVIESS

DATE: April 21, 1999

TIME: 11:00 a.m.

PHOTO BY: Brad Taylor

SAMPLE: X208

DIRECTION: East

COMMENTS: Photo taken
of sediment sample
in Millbrig Hollow.



DATE: April 21, 1999

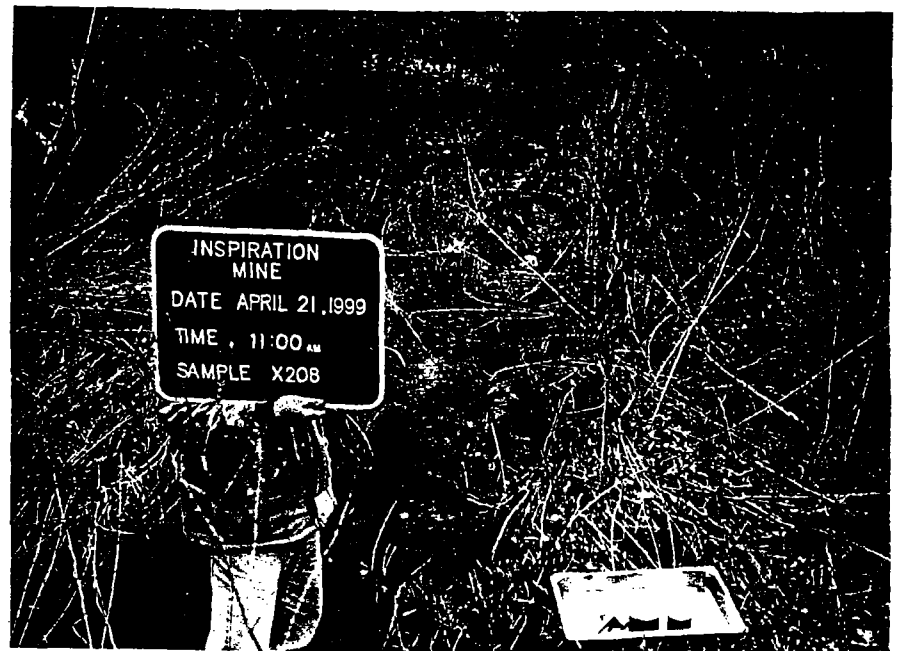
TIME: 11:00 a.m.

PHOTO BY: Brad Taylor

SAMPLE: X208

DIRECTION: West

COMMENTS: Photo taken
of sediment sample in
Millbrig Hollow.



SITE NAME: INSPIRATION MINES

CERCLIS ID: ILD 980905202

COUNTY: JO DAVIESS

DATE: April 21, 1999

TIME: 10:30 a.m.

PHOTO BY: Brad Taylor

SAMPLE: X209

DIRECTION: East

COMMENTS: Photo taken of sediment sample in Millbrig Hollow 120 feet west of the Galena River.



DATE: April 21, 1999

TIME: 10:30 a.m.

PHOTO BY: Brad Taylor

SAMPLE: X209

DIRECTION: West

COMMENTS: Photo taken of sediment sample in Millbrig Hollow 120 feet west of the Galena River.



Appendix D



RECEIVED

MAR 03 1982

E.P.A. - D.L.P.C.
STATE OF ILLINOIS

DATE: February 26, 1982

TO: Division File ✓

FROM: Kenneth S. Bardo KSB

SUBJECT: 08581801 - Jo Daviess Co. - Galena/Inspiration Mines, Inc.
Soil Contamination from Lead and Zinc Mining.

Samples were obtained on and around Inspiration Mines property on October 1, 1981 and November 19, 1981 through a combined effort of the DWPC and DLPC Rockford Regional Offices. Twenty-four soil, ten sediment, five tailings, one ore, three grass, and two water samples (see attached site sketch for locations) were obtained in the area to determine the extent of off-site contamination caused by past lead and zinc mining operations by Eagle-Picher. The mine is now under the ownership of Inspiration Mines, Inc.

Concentrations of As, Cu, Fe, Pb, Ni, and Zn were determined along with pH and % moisture for mineral samples (see condensed data in back of report). These concentrations were determined by both acid digest which indicates total metals and 48 hour water leach which would indicate available metals. EP toxicity tests were also requested but the results have not yet been received due to laboratory difficulties. Only acid digest was performed on the grass samples for total metals and water samples were sampled using preservative bottles and analyzed using standard laboratory techniques.

From this data certain observations can be made:

- 1) Ore residue on the storage slab is high in total Fe, Pb, and Zn (15.4%). Available Pb and Zn is minor compared to total amounts however both exceeded effluent standards for leachate by 53 and 5.6 times, respectively.
- 2) Sickly and healthy grass located in or near the barren area (samples 7 & 8) trending northeast from the ore storage slab has significantly higher amounts of Pb and Zn than the control sample (#9). In addition, the grass islands within the barren area (sample 7) have the highest Fe, Pb, and Zn contents in their tissue.
- 3) Groundwater (sample 19) in the area was not contaminated with metals. Standing water (sample 20) in the intermittent stream exhibits amounts of Fe and Pb that exceed water quality standards by 7.4 and 2.7 times, respectively.
- 4) Samples from the tailings pile (nos. 22 & 23) are high in total Fe, Pb, and Zn but these metals are not available.
- 5) Transported tailings and sediments on or directly adjacent to Inspiration Mines property (samples 15, 16, 18, 24, 25, 26, 30, 31, 42, and 43) all exhibit high total concentrations of Fe, Pb, and Zn, most of which exhibit available amounts also.

- 6) Sediments from the southeasterly flowing intermittent stream located below the ore storage slab (samples 10, 12, and 21) have available Pb and Zn concentrations that decrease downstream from the ore storage slab while Fe concentrations increase.
- 7) Surface soil samples in the barren area (nos. 1, 2, 3, 4, 33, 34, 36, and 38) extending downslope from the ore storage slab to the waterway exhibit high concentrations of total Fe, Pb, Zn and also concentrations of available Pb and Zn that greatly exceed their effluent standards for leachate. Iron is available only in sample 38, furthest from the slab, where there is also a reduction in available Pb and Zn. pH of these samples is slightly acidic, being 6.3 to 7.0.
- 8) Soil samples 11, 44, and 45 can serve as controls. Sample 45 has the least total metal concentration but does exhibit detectable available lead. Available Pb was not detected in sample 11. Other possible control samples (nos. 5, 13, 14, and 17) have elevated concentrations of total metals and both cornfield samples (nos. 5 and 17) contain lead which is available. The pasture samples (nos. 13 and 14) do not show any available Pb.
- 9) Compared to the controls, garden soil north of the Jochum house (samples 40 and 41) contains elevated amounts of most all metals in both available and total forms. Available lead concentrations exceed effluent standards for leachate.
- 10) When comparing surface soil samples to those taken 6-7" below the surface (nos. 28/27, 33/32, 34/35, 36/37, and 38/39) total and available metal concentrations are typically much greater in the surface soil. Available lead was found only in the subsurface for samples 37 and 39.
- 11) Since the 48 hour water leach technique uses distilled water while EP toxicity uses water treated with acetic acid at pH 5.0, the water leach test would be expected to produce lower lead concentrations than the EP Toxicity test. The EP toxicity standard for lead is 5.0 ppm. Based on this information, samples 2 and 6 would definitely be classified as hazardous material as they already exceed this standard. In addition, any sample exhibiting available lead in great enough concentrations, say for example 1.0 ppm, might also be hazardous using EP Toxicity. Samples 1, 3, 4, 12, 28, 33, 34, 36, and 38 could have the potential of being defined as hazardous material. EP Toxicity analysis was requested but results have not yet been received.

Based on the above observations, the following conclusions are made:

- 1) During its use, the ore stockpiled on the concrete slab constituted an environmental threat to the local area. Surface runoff probably played an important role in the transport and dispersion of ore material downslope.
- 2) Vegetation near the concrete slab is accumulating metals within its tissue. The soil near the ore storage slab is probably

contaminated enough with metals to cause toxicity in plants.

- 3) Groundwater in the area is unaffected by mining operations or the ore that was stored on the Jochum property. One surface water sample indicates that soluble lead may exist in the intermittent stream north of Inspiration Mines however the source of this lead may be from the suspended solids and not the water itself.
- 4) Surface runoff from Inspiration Mine property and from the old ore storage slab has resulted in the transport and dispersion of material that has the potential to release high concentrations of Fe, Pb, and Zn into the environment if conditions are right. As a result, much of the surface soil and stream sediments on the Jochum property is detrimentally contaminated with metals, specifically lead and zinc. Greatest contamination occurs in the barren tongue extending downslope in a northeasterly direction from the ore storage slab.
- 5) Greater amounts of available metals may occur near the ore storage slab not only from the concentrated product but also from past soil conditioning techniques practiced by the Jochum's to alleviate the barren area problems. The addition of manure to the ore product that was washed downslope may have caused the metals to become more available.

In soils, metals become most available with increasing acidity as you get below a pH of 7.0. The addition of manure and resulting decomposition can reduce pH. Only those soil samples taken in the barren area had a pH below 7.0, the lowest being 6.3. This increase in acidity could make the metals more available in addition to the manure promoting chelation. Organic compounds can combine (chelate) with high valence metals and protect them from soil reactions that could render them insoluble. Chelated metals are readily assimilated by growing plants. Iron is usually the most strongly chelated and preferable ion but large concentrations of lead and zinc could change the stability of these reactions. Lead and zinc might then become the preferable ions to chelate and thus be available. Metals can also be adsorbed preferentially by certain clay types.

- 6) The surface soil is the main reservoir of metal contamination with little if any transport to the subsoil. Lead contamination studies have found this metal to be concentrated in the soil surface. There is little or no downward movement. Soil lead should be largely unavailable to plants as it is quite insoluble unless acid conditions exist.
- 7) Zinc is less toxic than lead but should be considered a problem at this site also. Zinc becomes only slowly available over a pH of 6.5, especially if it is in oxidized form. However, organic chelation processes could cause a possible toxicity problem and buildup in the soil of available zinc.

- 8) Wind-blown material from Inspiration Mines property may also be a source of metal transport to the surrounding area. However it appears that surface runoff is the major transport mechanism for dispersion of mineral material high in lead and zinc.

Based on these conclusions, the following remedies and suggestions are made:

- 1) The addition of lime to the locally affected area would reduce the availability of metals in the soil for plant uptake. Insoluble hydroxides and oxides would form but this would not result in the disappearance of the contaminants.
- 2) Do not allow animals to graze the area.
- 3) Divert surface runoff from Inspiration Mines property into a holding pond to prevent further contamination downslope.
- 4) Scrape off the surface few inches throughout the Jochum pasture and dispose of in bulk at an approved landfill. Deeper removal should occur in the barren area by the ore storage slab and a fresh topsoil applied.
- 5) Determine the status of legal actions undertaken by the Jochum's against Inspiration Mines. Any out-of-court settlement would probably affect the Agency's position on clean-up.
- 6) If not cleaned- up, file something with the County Recorder stating the problems of this land parcel.
- 7) Make these findings public to build awareness for people living near mining operations in Jo Daviess county.

Note: A source of information used in this report is:
Brady, Nyle C. 1974. The Nature and Properties of Soils.
8th Edition. MacMillan Publishing Co., Inc. N.Y., N.Y..

KSB:ksb

Attachments

cc: Jim Reid
Jim Kelty
Francis Gehrt
Joe Podlewski
Chuck Corley
Rocjford Region

APPROXIMATE LOCATION OF SAMPLE POINTS

2/22/82

Adapted from 1979 Aerial Photos
(8" to the mile)

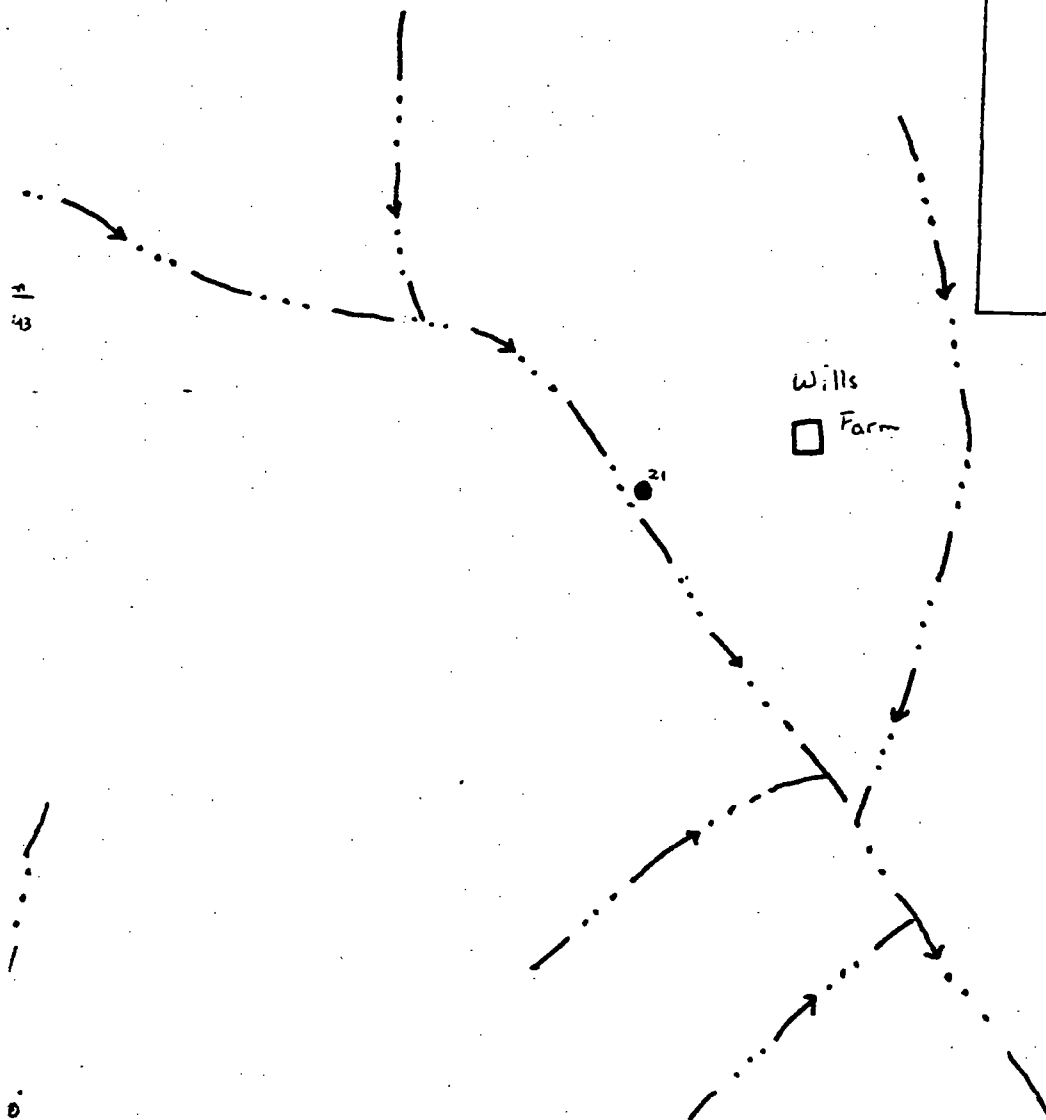


N

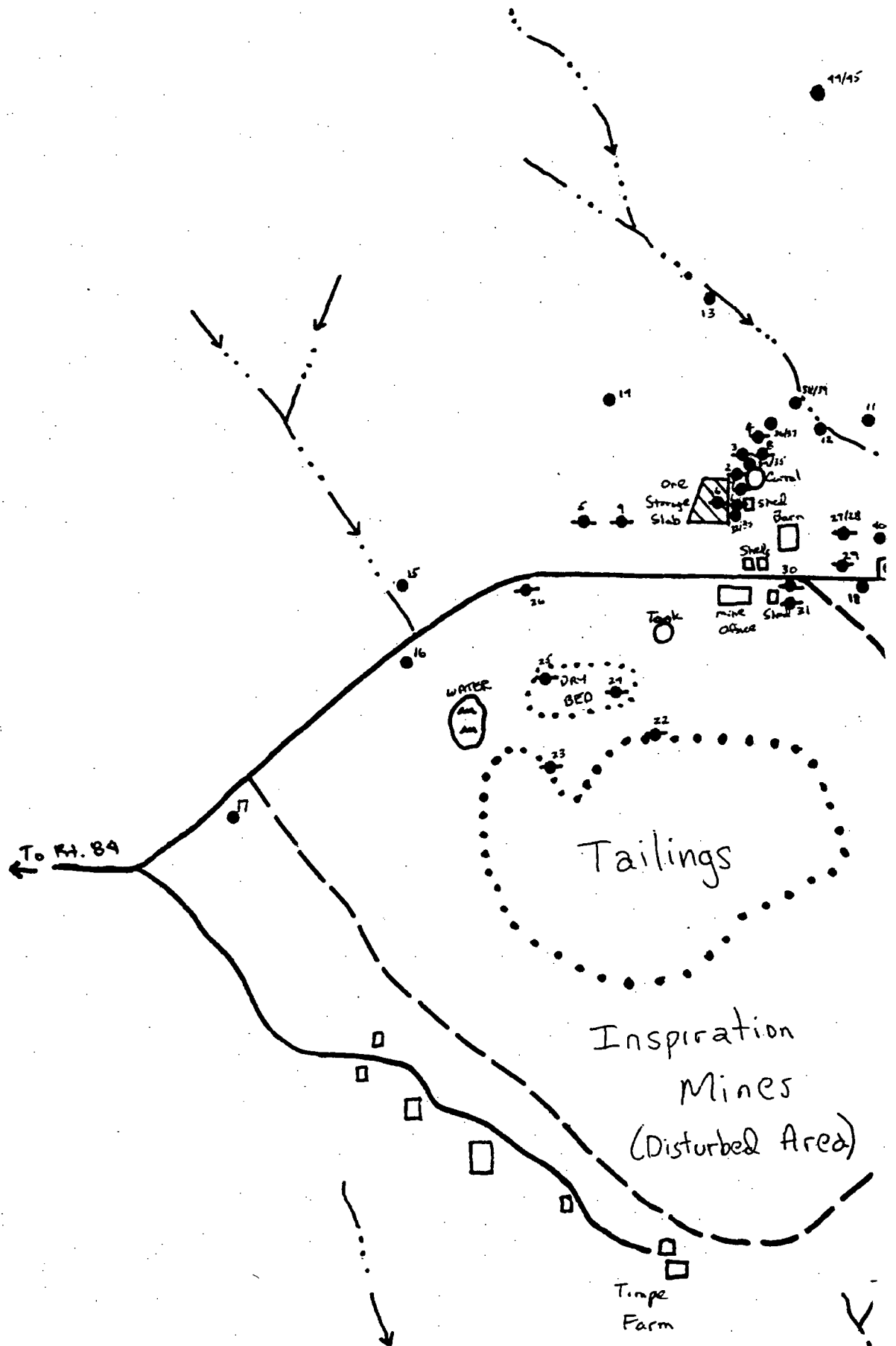
Approx. Scale
1" = 330'

KEY:

- - Buildings
- - Sample (DWPC)
- ◆ - Sample (DLPC)
- ... - Tailings Boundary
- - - - Disturbed Area of Mine



PG 08581801 - Jo Daviess Co. - Galena/Inspiration Mines, Inc.



STATE OF ILLINOIS
ENVIRONMENTAL PROTECTION AGENCY

1

Subject 08581801 - Jo Daviess Co. - Gokna / Inspiration Mines

Date SAMPLES TAKEN 10/1/81 & 11/19/81 TO DETERMINE CONTAMINATION

Reviewed by Kenneth S. Bardo

Date 2-22-82

CONCENTRATIONS (PPM) [⊗]

REPORT SAMPLE No.	FIELD SAMPLE No.	SAMPLE TYPE	DESCRIPTION	AS	CU	Fe	Pb	Ni	pH	Zn	% Moist
1	X101	Soil	Barren, sandy soil. Surface 1". Manure mixed in. ~30' E. of slab.	72.5 0.000	125.0 0.00	16,750 0.0	10,769 2.2	30.0 0.0	- 6.8	173.00 30.2	- 10.5
2	X102	Soil	Barren, sandy soil. Surface 1". Manure mixed in. At NE ₂ of slab.	100.0 0.000	112.5 0.00	60,000 0.0	9,031 5.13	30.0 0.0	- 6.6	223.00 29.3	- 11.5
3	X103	Soil	Barren, sandy soil. Surface 1". Manure mixed in. ~50' NE of X102.	35.0 0.000	225.0 0.00	10,500 0.0	29,375 2.12	30.0 0.0	- 6.5	149.00 30.2	- 12.4
4	X104	Soil	Barren, sandy soil. Surface 1". Edge of barren bog. Manure mixed in. ~50' NE of X103.	25.0 0.000	35.0 0.00	29,375 0.1	29.00 1.25	~25 0.0	- 6.5	65.50 5.6	- 15.0
5	X105	Soil	Cornfield. Brown silt loam. Surface 1". ~150' W of slab.	8.0 0.000	15.5 0.03	17,900 10.1	24.3 0.11	~25 0.0	- 7.3	3.50 0.5	- 19.1
6	X301	Ore	Ore product residue on E-central edge of concrete slab. Gray Silty	177.5 0.000	105.0 0.00	100,000 0.0	14,412 5.34	50.0 0.0	- 6.5	37,900 5.6	- 1.9
7	X302	Grass	Grass, some brown some green. ~10' E. of concrete slab.	0.5 -	6.5 -	122.5 -	560 -	~25 -	- -	2,905 -	- -
8	X303	Grass	Very green grass at edge of barren bog. Next to Cornfield.	40.3 -	9.5 -	315 -	14.8 -	~25 -	- -	972 -	- -
9	X304	Grass	Green healthy grass. At fence line by cornfield ~10' W of concrete slab.	0.5 -	0.0 -	370 -	370 -	~25 -	- -	158 -	- -
10	C1	Sediment	Gray-brown sandy sediment from dry streambed @ Mendon Rd. culvert.	17.5 0.003	19.0 0.01	29,23 3.0	56 0.12	~25 0.0	- 7.4	272 0.6	- 20.1
11	C2	Soil	Brown pasture soil north and upslope from streambed.	5.0 0.002	10.0 0.01	12,500 5.0	27.8 40.05	~25 0.0	- 7.5	81 0.1	- 10.1
12	C3	Sediment	Gray-brown sandy surface sediment downhill from slab at streambed.	10.5 0.001	35.0 0.01	27,500 2.3	963 1.4	~25 0.0	- 7.1	200 1.9	- 22.7
13	C4	Soil	Black soil from surface near waterway. North of slab.	6.0 0.001	10.0 0.00	11,700 2.0	133.5 40.03	~25 0.0	- 7.4	430 0.1	- 17.0
14	C5	Soil	Brownish-black clay surface soil in pasture next to cornfield	13.0 0.002	19.0 0.01	15,403 3.1	149 40.03	35.0 0.0	- 7.7	1612 0.4	- 20.0
15	C6	Sediment	Sandy sediment at cornfield fence from mine runoff.	62.5 0.000	37.5 0.00	45,000 0.2	1123 40.03	35.0 0.0	- 7.7	3718 0.0	- 6.7
16	C7	Sediment	Sandy sediment on Inspiration Mines property by access road.	55.0 0.000	33.8 0.00	17,500 0.2	1785 40.03	25.0 0.0	- 7.4	462 0.1	- 20.4
17	C8	Soil	Grayish-black clay soil in cornfield at NW ₄ of mine property	11.0 0.000	11.5 0.02	17,131 12.0	104.5 0.17	~25 0.0	- 7.7	1455 1.7	- 17.3
18	C9	Sediment	Gray sandy sediment in ditch south	-	21.1	40,000	14.0	~25	-	4000	-

STATE OF ILLINOIS
ENVIRONMENTAL PROTECTION AGENCY

Subject 08581801 - ToDawless Co. - Galena/Inspiration Mines

Date SAMPLES TAKEN 10/1/81 & 11/19/81 TO DETERMINE CONTAMINATION

Reviewed by Kenneth S. Barbo

Date 2-22-82

Reviewed by: Kenneth S. Jurek				Date: 2-22-00	CONCENTRATIONS (PPM) [Ⓢ]							
REPORT SAMPLE No.	FIELD SAMPLE No.	SAMPLE TYPE	DESCRIPTION	As	Cu	Fe	Pb	Ni	pH	Zn	90 Moist	
19	C10	Water	Well water from kitchen tap of Jochum Farmhouse.	<0.001	0.01	0.0	<0.03	0.0	8.5	0.4	-	
20	C11	Water	Brown, murky, standing water in ditch on East side of Mendon Rd.	0.010	0.01	7.9	0.27	0.0	8.3	0.6	-	
21	C12	Sediment	Grayish brown sediment from waterway 1/4 mi. E. of Mendon Rd.	-	13.5	18.2	75.3	4.5	-	735	-	
				0.004	0.01	3.9	0.09	0.0	7.7	0.2	16.5	
22	X305	Tailings	Coarse gravels and sands from jig pile. A few inches down.	25	9.0	44.34	376.0	25.0	-	5438	-	
				0.000	0.00	0.1	0.03	0.0	7.1	0.02	9.1	
23	X306	Tailings	Coarse gravels and sands from jig pile. Same as detection.	30	12.5	18.77	779.0	27.5	-	9125	-	
				0.000	0.00	0.2	0.03	0.0	7.5	0.03	5.0	
24	X307	Sediment	Gray sands at east end of dry settling pond. A few inches down.	35	30.5	71.93	2327.5	37.5	-	11700	-	
				0.000	0.00	0.1	0.03	0.0	7.0	6.6	42.5	
25	X308	Sediment	Brown sands at west end of dry settling pond. From surface.	66	42.5	62.27	2327.0	47.5	-	13600	-	
				0.000	0.01	0.1	0.09	0.0	7.1	2.2	32.0	
26	X309	Sediment	Wind-blown gray-brown sand on S.E. side of access road.	50	32.5	44.012	1504.5	32.5	-	2918	-	
				0.000	0.00	0.1	0.03	0.0	7.2	0.1	5.3	
27	X310	Soil	Brown sands and gravels 6" deep in Jochum pasture W. of house.	15	15.2	24.351	150.0	27.5	-	2445	-	
				0.000	0.00	0.5	0.03	0.0	7.6	0.1	12.1	
28	X311	Soil	Gray fines from surface set 5' West of X310. Below drain.	210	24.0	27.71	766.8	42.5	-	5198	-	
				0.004	0.01	1.7	1.19	0.0	7.9	0.5	33.2	
29	X312	Soil	Brown surface fines in drain crossing under access road.	24.3	22.5	71.60	2210.0	32.5	-	4962	-	
				0.000	0.01	0.5	0.03	0.0	7.9	0.1	26.5	
30	X313	Sediment	Gray-brown sands & gravels in roadside drain by Mine shed.	24	22.5	43.719	5851.3	42.5	-	6428	-	
				0.001	0.01	0.7	0.52	0.0	7.8	0.3	8.3	
31	X314	Tailings	Gray sands - gravels on mine property above X313 next to shed.	30	30.0	44.352	1336.5	42.5	-	7575	-	
				0.000	0.01	0.1	0.30	0.0	7.0	0.1	6.7	
32	C2	Soil	Brown clay soil 30" NE of (7" below surface) SE of concrete ore storage slab.	4.3	14.0	19.656	764.3	42.5	-	8000	-	
				0.001	0.01	0.5	0.03	0.0	6.6	22.0	19.4	
33	C3	Soil	Brown-gray sandy soil at surface. Same pt. as C2.	47.5	90.0	65.28	1960.0	90.0	-	10750	-	
				<0.001	0.01	0.0	2.16	0.0	6.4	33.7	4.9	
	C4	Soil	Gray, sandy surface soil 105' NE of ore storage slab.	30.0	175	39.575	4416.3	32.5	-	112875	-	
				<0.001	0.01	0.1	4.99	0.0	6.3	65.7	15.3	
35	C5	Soil	Brown, clay soil 7" deep below sample C4.	4.0	10.0	13.942	309.0	32.0	-	1530	-	
				<0.001	0.01	0.3	0.03	0.0	6.7	1.8	18.5	
36	C6	Soil	Gray, gravelly surface soil	52.5	53.6	62.043	1274.3	40.0	-	11000	-	

STATE OF ILLINOIS
ENVIRONMENTAL PROTECTION AGENCY

Subject 08581801 - Jo Daviess Co. - Golena Inspiration Mines

Data SAMPLES TAKEN 10/1/81 & 11/14/81 TO DETERMINE CONTAMINATION

Reviewed by Kenneth S. Barde

Date 2-22-82

viewed by Kenneth J. Darden Date 2-22-02

REPORT SAMPLE No.	FIELD SAMPLE No.	Sample TYPE	DESCRIPTION	CONCENTRATIONS (PPM) [⊗]								% Moisture
				As	Cu	Fe	Pb	Ni	pH	Zn		
37	C7	Soil	Brown, clay soil 7" deep below sample C6.	7.8 0.002	22.0 0.31	2523 2.9	713.0 0.19	25 0.0	— 7.1	145 0.6	— 20.1	
38	C8	Soil	Gray-brown sandy soil at surface & 300' NE of ore storage slab	9.3 0.002	22.5 0.02	22,027 1.7	855.3 1.19	25 0.0	— 7.0	145 2.2	— 25.3	
39	C9	Soil	Brown, clay soil 7" deep below sample C8.	6.8 0.004	14.0 0.02	12368 8.7	251.5 0.26	25 0.0	— 7.2	1210 0.8	— 20.0	
40	C10	Soil	light brown, loose, garden soil from surface north of Jackson House.	9.0 0.004	17.5 0.02	11,002 3.9	759.8 0.22	32.0 0.0	— 7.9	1562 0.9	— 22.5	
41	C11	Soil	loose, brown, garden soil 7" deep below sample C10	8.0 0.010	15.0 0.03	19,180 1.5	301.5 0.49	27.5 0.0	— 8.0	1438 0.3	— 21.9	
42	C12	Tailings	Gray, gravelly tailings in drainage ditch East Meridian Rd. Surface.	14.3 0.002	12.5 0.01	34,018 2.1	679.8 0.05	32.0 0.0	— 7.5	3410 0.3	— 8.1	
43	C13	Tailings	Brown & gray, gravelly tailings in ditch 7" below sample C12.	15.5 0.002	12.8 0.01	32,136 1.2	890.5 0.15	32.0 0.0	— 7.9	8850 0.3	— 17.1	
44	C14	Soil	Brown, clay surface soil in cornfield 1/4 mi. N. of mine at ridge top.	4.8 0.004	4.0 0.01	12,804 1.8	61.3 0.28	25 0.0	— 7.2	162 0.1	— 22.0	
45	C15	Soil	Brown, clay soil in cornfield 7" deep below sample C14.	4.5 0.007	4.0 0.02	13,188 2.4	25.0 0.05	25 0.0	— 7.1	69 0.2	— 18.0	

⊗ Upper line by acid digest. Lower line by 48 hr. water leach.

Numbers 1-21 Sampled 10/1/81.

Numbers 22-45 Sampled 11/14/81.

C Numbers Sampled by DWPC.

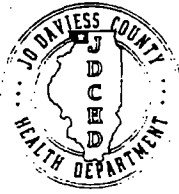
X Numbers Sampled by DLPC.

See Site Sketch For Locations

pH based on 10% Solution (100 g. soil/900 ml H₂O)

Acid Digest = mg/kg (dry wt.)

Water Leach = mg/l (10% solution - moist sample)



90-142

085818000/Jo Daviess
Inspiration
S.F. Tech

Jo Daviess County Health Department

9483 US Rt. 20 West • P.O. Box 318 • Galena, Illinois 61036 • Phone 815/777-0263

July 5, 1990

Quarles & Brady
411 East Wisconsin Avenue
Milwaukee, Wisconsin 5320-4497

Dear Ross:

Attached is a copy of the wells sampled in the past. I'm also enclosing a possible list of wells to be sampled this year. I spoke with scientists at the Illinois State Water Survey and the State Geological Survey about aquifer water movement. They felt that the geological and hydrological factors would indicate a southwestern flow of water in the aquifer. For this reason, we weighted the south and west wells more heavily.

Let me know if you have any questions.

Sincerely,

A handwritten signature in cursive script that reads 'Mark Elder'.

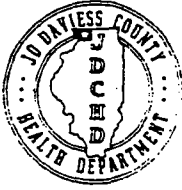
Mark Elder
Director of Environmental Health

ME/gw

xc: Sue Doubet, IEPA

kinneyro

Equal Opportunity Employer



Jo Daviess County Health Department

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EAGLE PICHER WATER SAMPLES

1. ROGER TIMPE	7143 RT. 84 N
2. EAGLE PICHER	6980 RT. 84 N
3. IDC	7147 RT. 84 N
4. JAMES PURDY	7597 RT. 84 N
5. ED HOLLAND	7165 MERIDIAN ROAD
7. DON BAUER	10152 W. COUNCIL HILL RD
8. DENNIS HARLE	20714 W. COUNCIL HILL RD
9. VINCE TIMPE	6781 RT. 84 N
10. MERLIN TIMMERMAN	6914 RT. 84 N
11. MERLIN TIMMERMAN	7138 RT. 84 N
12. VINEGAR HILL TWP HALL	7674 RT. 84 N
13. BRIAN GREEN	9892 W. COUNCIL HILL RD
14. ROBERT SOAT	9474 W. COUNCIL HILL RD




JO DAVIESS COUNTY HEALTH DEPARTMENT

9483 US RT. 20 WEST GALENA, ILLINOIS 61036 PHONE 815/777-0263

<u>SAMPLE #</u>	<u>DESCRIPTION</u>	<u>LOCATION</u>	<u>AMOUNT</u>
48619 E.P. Mine	Cyanide, total pH Lead	water well serving the office	0.006 mg/L 7.47 units < 0.01 mg/L
48620 shaft	Cyanide, total pH Lead	Graham shaft	.17 ug/g 7.43 units 14.0 ug/g
48738 Timpe 7143 Rt. 84N	Cyanide, total pH Lead	Roger Timpe	0.003 mg/L 7.35 units < 0.01 mg/L
48739 7165 Meridian	Cyanide, total pH Lead	Wills	0.003 mg/L 7.23 units 0.04 mg/L
48893 Spring	Cyanide, total pH Lead	"spring" discharge previously dyed by Eagle P. Mine	0.003 mg/L 7.90 units 0.04 mg/L
48950 Holland	Cyanide, total pH Lead	7464 N. Meridian Rd.	0.001 mg/L 6.58 units 0.01 mg/L

Mr. Richardson,
see are the sample results from Eagle P. Mine &
surrounding area.



Illinois Department of
**Public
Health**

087 8180001 JOMU,
~~1031629201~~
Inspiration Mines
S.F. Teey
John R. Lumpkin, M.D., M.P.H., Director

525-535 West Jefferson Street • Springfield, Illinois 62761-0001

MEMORANDUM

TO: Sue Doubet, IEPA
FROM: Michael Moomey, Toxicology Section,
DATE: March 13, 1995
RE: Inspiration Mines (#1031629201H)

On November 9, 1994, a site visit was conducted at the Inspiration Mine site and the area surrounding the site. Soil samples and wipe samples were collected on and off-site during the site visit. Fugitive dust emissions from the site have historically been reported from neighbors of the site.

During the visit, five wipe samples (inside and out) and eight soil samples were collected from the adjacent resident property located to the west of the site. Seven additional soil samples were collected from the Inspiration Mine site and one background soil sample was collected from a corn field located approximately one mile north of the site. These samples were analyzed by the IDPH laboratory in Chicago. All samples were analyzed for lead, arsenic, cadmium, zinc, nickel, and chromium. The locations of the soil samples from the farm are illustrated in the map that is attached.

Sterile alcohol wipes were used to collect the wipe samples. An area of six inches by six inches (36 square inches) was measured for each surface sampled. Stainless steel trowels were used to collect the soil samples. All soil samples were collected at depths of one inch or less, unless otherwise stated. The trowels were decontaminated after collection of each sample. Surface samples (<3 inches) are routinely collected to represent the area most likely contacted by receptors.

RECEIVED
MAR 17 1995
IEPA/DLPC

The results of the analyses for the wipe samples are summarized in Table 1.

TABLE 1
WIPE SAMPLE RESULTS

Location	Result (μg)	Conversion ($\mu\text{g/sq.ft.}$)
Attic Floor	339 (Pb) 10 (As) 710 (Zn)	1,356 (Pb) 40 (As) 2,840 (Zn)
Outside Window (2nd Floor sill)	175 (Zn)	700 (Zn)
Porch Outside Window (sill)	46 (Pb) 379 (Zn)	184 (Pb) 1,516 (Zn)
Outside (Roof)	10 (Pb) 13 (As) 197 (Zn)	40 (Pb) 52 (As) 788 (Zn)
Basement Joist	566 (Pb) 1,790 (Zn)	2,264 (Pb) 7,160 (Zn)
Blank	216 (Zn)	N/A

μg = micrograms

$\mu\text{g/sq.ft.}$ = micrograms per square foot

Table 2 summarizes the results of the soil samples taken from the farm property:

TABLE 2
RESIDENTIAL SOIL SAMPLE RESULTS

Location	Result ($\mu\text{g/g}$)
1. North Side (Dripline)	227 (Pb) 807 (Zn)
2. Dripline of Pine Trees	62 (Pb) 328 (Zn)
3. Garage (Dripline)	394 (Pb) 25 (As) 1,200 (Zn)
4. East of Driveway	2,590 (Pb) 72 (As) 4,650 (Zn) 43 (Ni)

Location	Result ($\mu\text{g/g}$)
5. North of Barn	1,620 (Pb) 34 (As) 2,900 (Zn)
6. Electric Fence Line	3,170 (Pb) 55 (As) 3,780 (Zn) 27 (Ni)
7. Base of Bush (near Pine Trees)	1,150 (Pb) 38 (As) 2,520 (Zn)
10. Composite (yard)	298 (Pb) 909 (Zn) 29 (Cr)

$\mu\text{g/g}$ = micrograms per gram (ppm).

The results of the soil samples taken from the Inspiration Mine site are presented in Table 3 below:

TABLE 3
ON-SITE SAMPLE RESULTS
INSPIRATION MINES

Location	Result ($\mu\text{g/g}$)
8. Tailings	5,390 (Pb) 48 (As) 2,710 (Zn) 21 (Ni)
9. Float Tailings (0-12 inches)	1,420 (Pb) 44 (As) 1,910 (Zn) 20 (Ni)
11. Mossy Area on Hill	10,800 (Pb) 909 (Zn) 29 (Cr)
12. Base of Hill (Stream Sediment)	7,800 (Pb) 65 (Cd) 27,300 (Zn)
13. Jig Tails	1,110 (Pb) 75 (As) 7,890 (Zn) 59 (Ni)

Location	Result (ug/g)
14. Puddle Sediments (Tailings)	3,730 (Pb) 24 (As) 25 (Cd) 7,580 (Zn) 23 (Ni)
15. Float Tailings (Acid Wash Analysis)	1,120 (Pb) 41 (As) 3,220 (Zn) 25 (Ni)
16. Background Sample	191 (Pb) 1,170 (Zn) 23 (Cr)

The results of the soil samples are consistently higher than would be expected in Illinois soils. A publication from IEPA, "A Summary of Selected Background Conditions for Inorganics in Soil", lists the following mean concentrations for Illinois soils:

<u>Parameter</u>	<u>Concentration (ug/g)</u>
Lead	49
Arsenic	7
Cadmium	1
Zinc	103
Nickel	17
Chromium	17

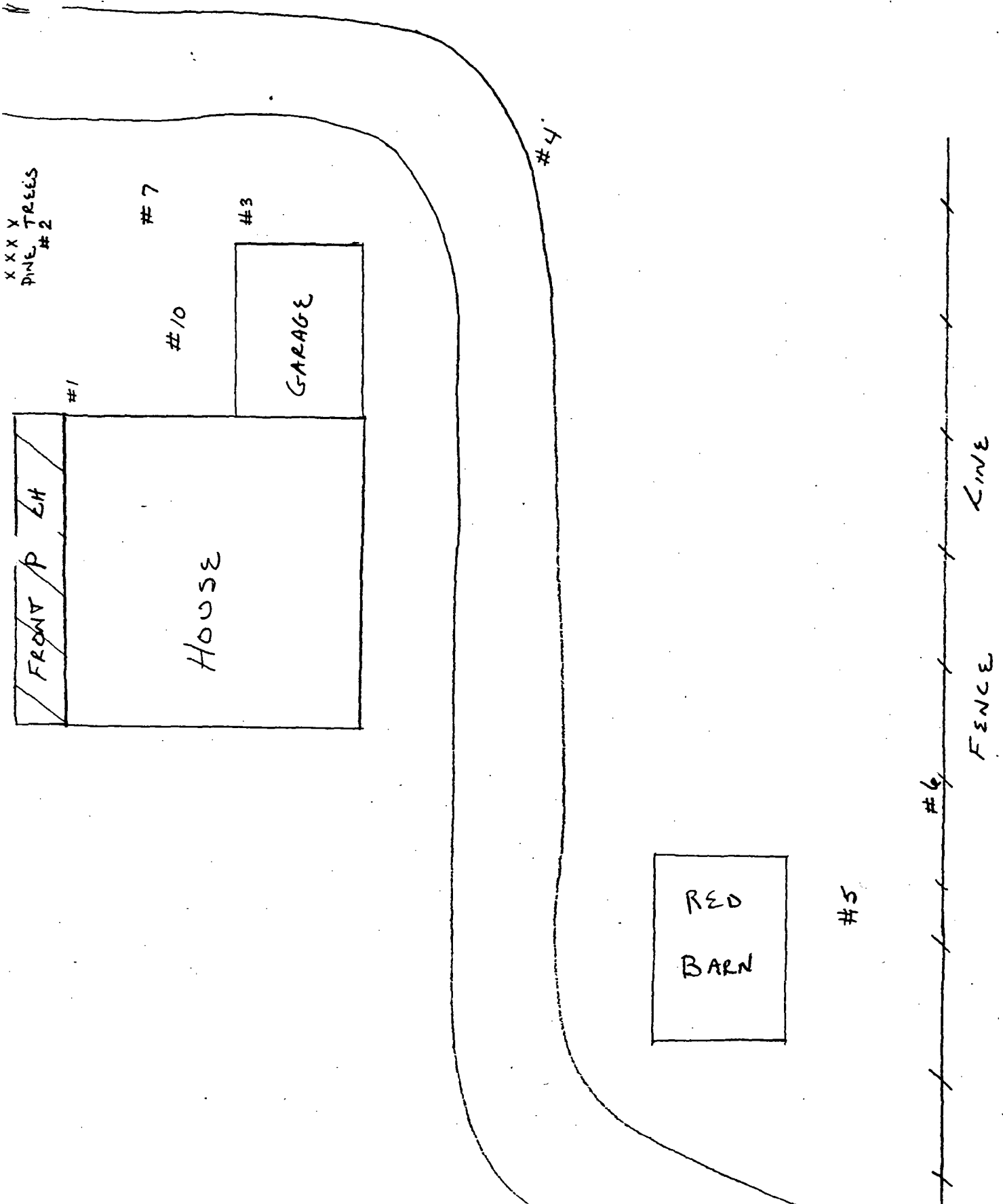
The elevated concentrations detected in off-site soils indicates that contaminants, primarily zinc and lead, and possibly arsenic, are being transported off-site. The likely transport mechanisms are fugitive dust emissions, surface water runoff, and vehicular tracking. The source of the lead dust inside is difficult to determine with certainty since lead was used in interior (and exterior) paint in older homes and some evidence of lead paint was detected on exterior surfaces with an XRF device (the interior had been gutted during renovations as you recall). While zinc did replace lead in paints, it is interesting to note that the on- and off-site soil samples contain high zinc in conjunction with high lead, a pattern which is also seen in the interior dust samples, even in the attic and basement where no painted surfaces were found and which were not appreciably disturbed during remodeling. Given the relative lack of tightness of older buildings, the history of fugitive dust emissions from the site, and the similarity of contaminant profiles between interior and exterior environmental samples, it might be concluded that some or all of the lead dust found inside has infiltrated from outside with the site being the most likely source. For your information, the IDPH has established standards

for lead in dust and soil in the Illinois Lead Poisoning Prevention Act. The standard for dust is 200 micrograms per square foot and the standard for soil is 1,000 micrograms per gram.

If you have any questions or require additional information, feel free to contact me at 782-5830.

cc: Rockford Region, IDPH
Paul Jagiello, IEPA
Connie Sullinger, IEPA
Howard Chinn, Attorney General Office
Pam Cirrochie, Attorney General Office
Mark Elder, Jo Daviess CHD
Gorden Coursen, Jo Daviess CHD

Residential Soil Sample Locations



Appendix E

REPORT OF A GROUNDWATER QUALITY DETERIORATION STUDY
IN THE VICINITY OF THE EAGLE-PICHER INDUSTRIES, INC.
MINE NEAR GALENA, JO DAVIESS COUNTY, ILLINOIS

by W. H. Walker

INTRODUCTION

The Eagle-Picher Industries, Inc. lead and zinc mine, located approximately 4 miles north of Galena in Jo Daviess County, Illinois (see figure 1), began operation in June of 1948. From the beginning of the first shaft sinking in November 1947 until abandonment of the mine in January 1966, large quantities of groundwater had to be pumped from the Galena-Platteville limestone and dolomite rocks which contain the ore body to permit excavation of the minable ore. Reported pumping rates required to dewater this aquifer below the mine workings were slightly more than 10,000 gallons per minute (gpm) at the beginning of shaft sinking in November 1947; about 4000 gpm in mid-1950; and about 1000 gpm near the end of mining operation in 1966. It is estimated that more than 20 billion gallons of groundwater were pumped to waste from the aquifer in the vicinity of the mine during its 18 years of operation.

Following abandonment of the mine in 1966, the floatation-process ore separation mill has continued to process ore from other mines operating within the general area. This mill is located in the southeast corner of Section 25, T. 29N., R. 1W. Prior to about June 1966 waste-processing water from the mill was discharged through two sedimentation ponds into a small creek which heads near the center of the east line of Section 36, T. 29N., R. 1W., and which discharges into the Galena River about one mile southeast of the mill. According to a State Department of Public Health report of March 8, 1966, the waste water from the mill at that time contained much turbidity even at the river discharge point. Between April and June of 1966 the entire flow of waste-discharge water from the mill was diverted from the creek into the mine, partly through an old mine shaft at a point just below the spillway of the lower settling pond (near the center of the east line of irregular Section 32, T. 29N., R. 1E.,) and partly through another opening to the mine in the immediate vicinity of the process mill.

No data are available to indicate the chemical quality of mill process water discharged to the mine between June 1966 and

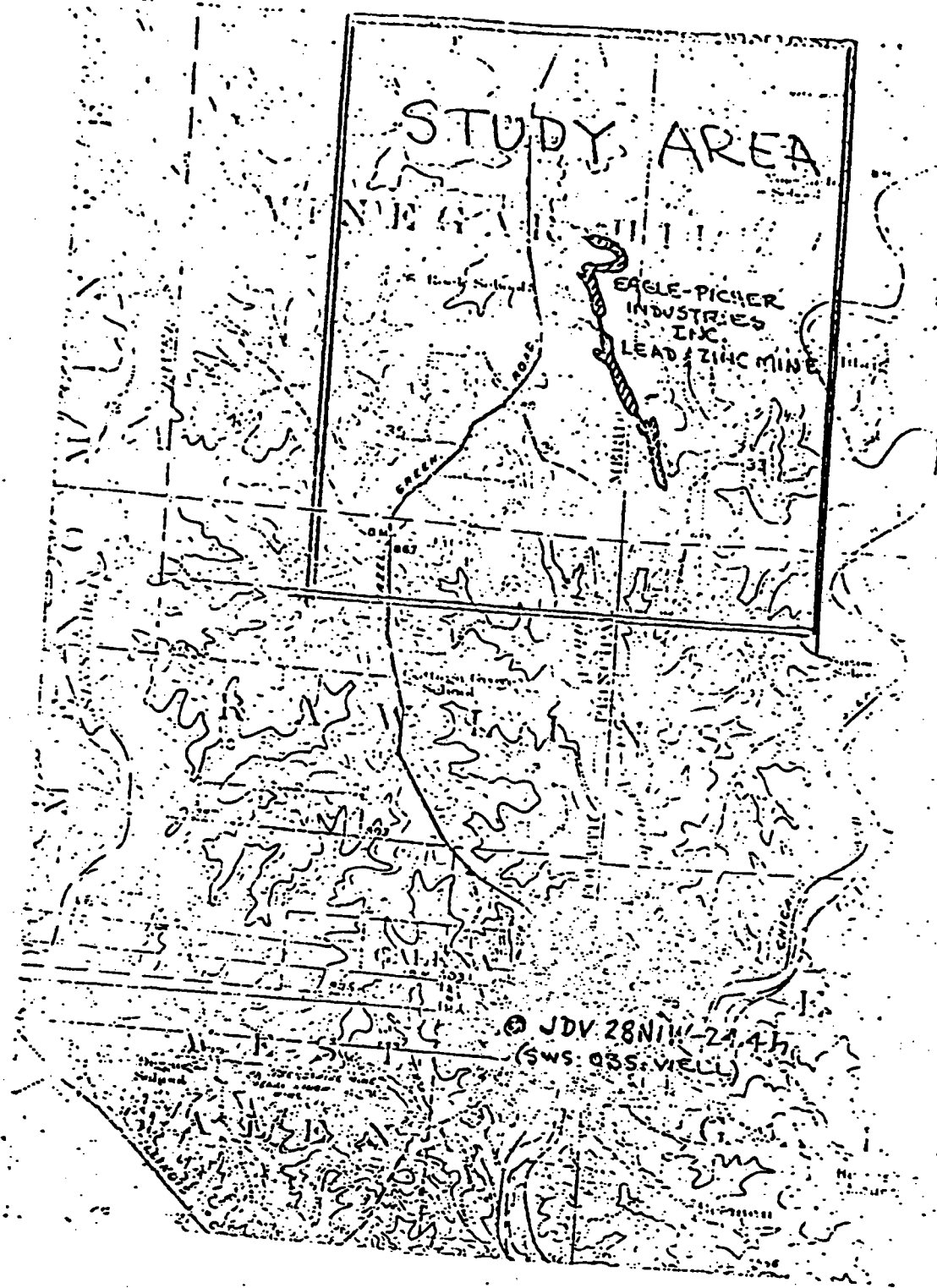


Figure 1. The Galena area, Jo Daviess County, Illinois

June 1968. Analyses of waste water samples collected by the State Health Department on June 21, July 3, and July 11 of 1968 indicate the following range in chemical constituents.

pH	7.2 - 7.5	Cadmium (Cd)	0 - .02
TDM	2940 - 4121	Lead (Pb)	0 - 2.4
Hardness	2680 - 2960	Zinc (Zn)	0.9 - 19
Iron (Fe)	2.2 - 20	Cyanide (Cn)	.07 - 0.2
Copper (Cu)	.01 - .09	Sulfate (SO ₄)	308 - 850

These analyses were made following a groundwater-quality deterioration complaint made by Mr. Clarence Houtakker, a farmer who lives near the mine. The complainant obtains his farm and home water supply from a drilled well tapping the Galena-Platteville limestone and dolomite aquifer at a point approximately 2000 feet west of the abandoned Eagle-Picher Industries, Inc. mine. It was his belief that the waste-water disposal method being employed by the Mining Company was contaminating his water supply. He had first noticed a marked deterioration in water quality approximately 6 months prior to his first complaint to the State Health Department. The results of analyses of water from this and several other nearby wells made by the State Health Department in June 1968 indicated a possible correlation between the mill process waste water discharge into the aquifer and the general deterioration in groundwater quality which seemed to have spread throughout an appreciable part of the aquifer in that area.

The State Water Survey was requested to assist the Sanitary Water Board in an investigation to determine the cause of the groundwater quality deterioration early in July of 1968, and the first field trip to the area was made by Water Survey personnel on July 11 of that year. During the course of the next few months several water-level measurements were made in wells and the various mine openings, and water samples of process waste water from the mill and of groundwater from the wells in the area were collected and analyzed. This report summarizes the results of our analysis of these data.

WATER TABLE ELEVATION CHANGES

Prior to the beginning of mine operations in 1948, the water table in this part of the aquifer was generally between about 750 and 800 feet above sea level as is illustrated in the water-table contour map in figure 2. Groundwater flow within the area at this time was primarily to the east and west from the high ridge running north-south through Sections 24, 25, and 36 of T. 29N., R. 1W. A secondary component of

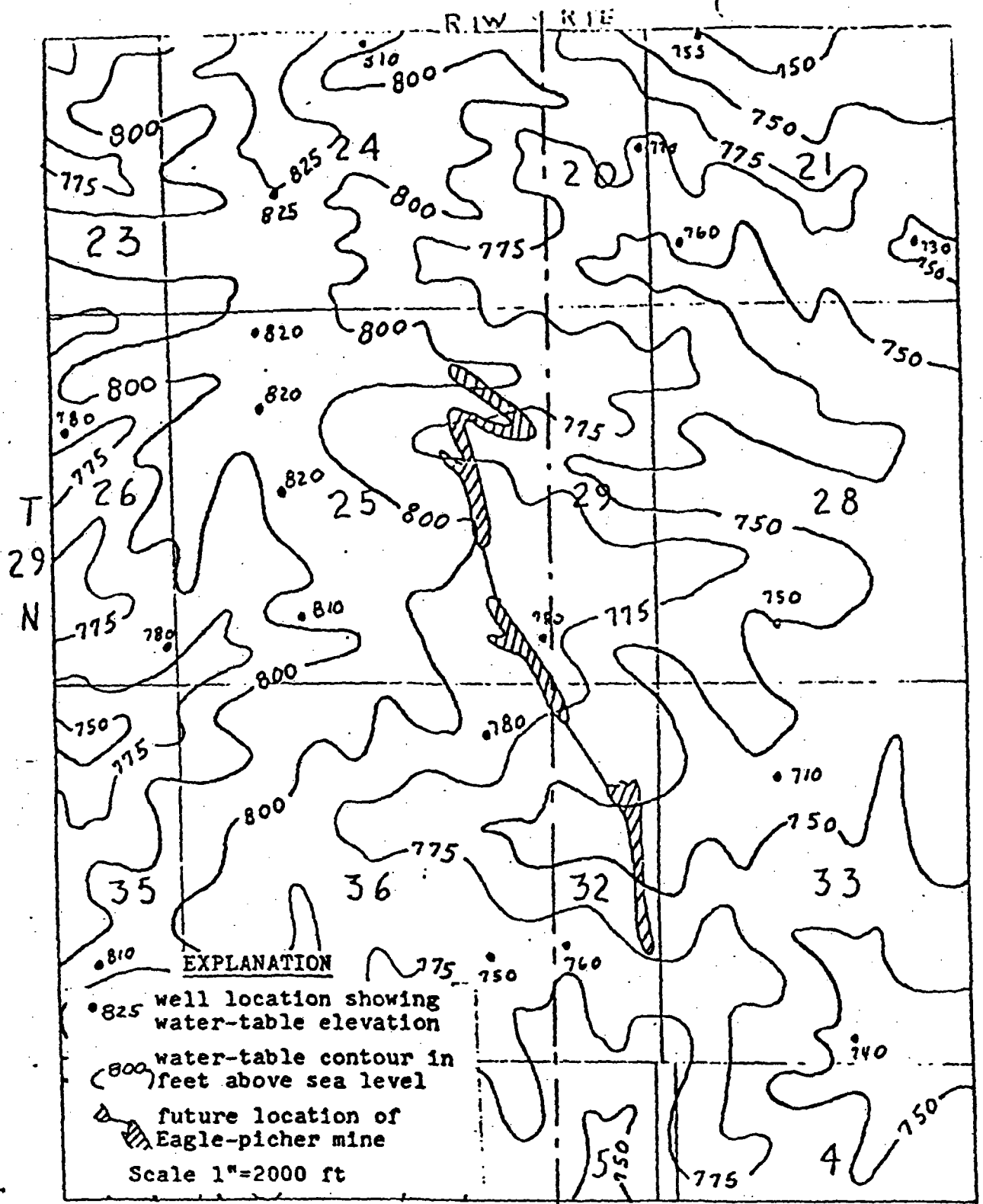


Figure 2. Approximate elevation of water table - January-February 1934

southerly flow is also evident along the northern and southern borders of the study area, but this flow also was generally intercepted by the primary flow paths so that it too was eventually diverted westward to the Sinsinawa River or eastward to the Galena River. Water-level data used to construct the contour map in figure 2 were collected by Water Survey field engineers during a 1934 well inventory study (see Appendix A). Measuring point elevations used in this interpretation were taken from the U. S. Geological Survey map for the area (Galena Quadrangle) which has a contour interval of 20 feet. The map is intended to generally show the probable direction of ground-water flow throughout the area at that time.

During the 18 years of mine operation (1948-1966), the water table was lowered and then maintained by continuous pumping below an elevation of 625 feet above sea level along the entire reach of the ore body so that dry working conditions would prevail at all times within the mine. This dewatering of the aquifer greatly altered normal groundwater flow paths so that, within the cone of influence of the mine operation, groundwater flow was diverted toward the mine throughout an area of approximately 4 square miles. The maximum lowering of the water table in the vicinity of the mine during the 1947-1966 period of operation was probably between about 175 and 200 feet below the levels shown in figure 2. After the mine was abandoned, dewatering no longer was necessary and the water table began to recover in response to recharge from precipitation on the dewatered part of the aquifer. Pumpage from the abandoned mine to meet the process requirements of ore from other mines in the general area probably permitted only minimal water-table recovery for a time immediately following abandonment when the waste water from the process plant was permitted to flow to the Galena River. However, between June 1966 and November 1968, the period when all the process waste water was returned to the mine, it is estimated that as much as 125 feet of water-table recovery occurred in the immediate vicinity of the mine.

The general water-table elevation throughout the study area during the first part of July 1968 is shown in figure 3. Most of the water-level data used in the construction of this map was collected by State Sanitary Water Board personnel. Measurements by Water Survey personnel were made in only a few of the more seriously affected wells and in readily accessible mine openings within the study area. Most of the water-level elevations shown were obtained by subtracting water-level measurements made with a steel tape to the nearest hundredth of a foot from measuring point elevations taken from a preliminary copy of a revised topographic map soon to be released to the using public by the U. S. Geological Survey. Water-level elevations so

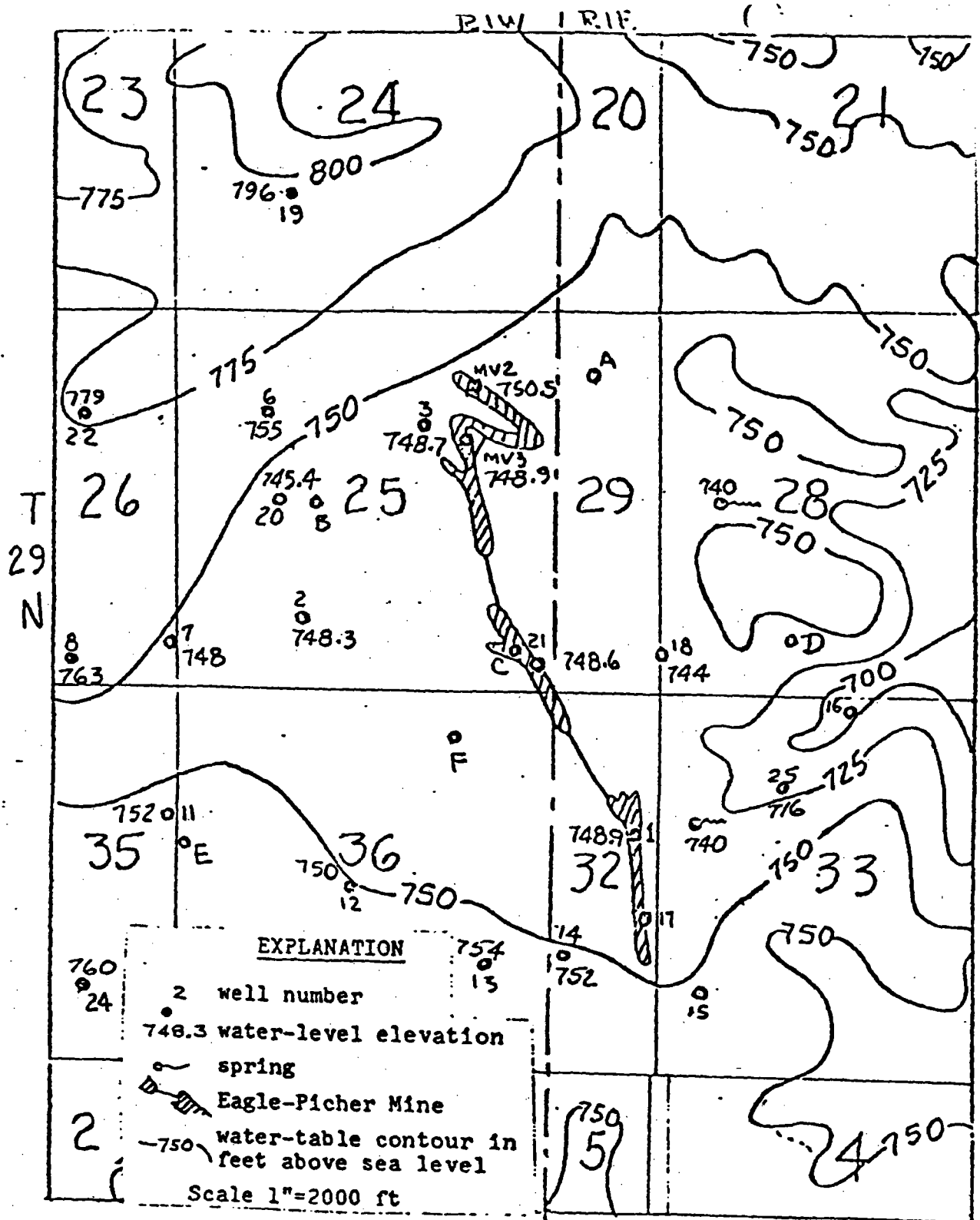


Figure 3. Approximate elevation of water table - July 1968

determined are expressed on figure 3 only to the nearest foot. Those elevations shown to the nearest tenth of a foot were determined from steel tape measurements of water levels made to the nearest one hundredth of a foot and subtracted from measuring point elevations determined from spirit leveling made to the nearest hundredth of a foot by a private consulting engineering firm. The resultant elevations were then rounded off to the nearest tenth. A complete tabulation of water-level data collected during the 1968 study are included in Appendix B. All available measurements taken on July 11, 1968, were used in the construction of the contour map shown in figure 3. However because a few of the readings on some of the outlying wells were not made until a few days after this time, these readings generally collected on July 25 or 26 of 1968 were used to supplement the map. This was justifiable from the water-level hydrograph in figure 4 for Water Survey observation well JDV 28N1W-24.4h (see figure 1 for location) which shows that during the entire month of July 1968 only minimal fluctuations in the normal water table occurred in this part of the state.

From figure 3 it is evident that a hydraulic gradient from the mine toward the west and east existed during the middle part of July. Although the gradient was only a matter of a few tenths of a foot within the critical area of adverse groundwater quality change, there nevertheless was a "downhill" slope from the mine toward every one of the wells which had been shown by chemical analyses to have been affected. This is especially significant when it is considered that geologic and hydrologic studies have shown the major solution cracks in the aquifer to be east-west oriented, and that water levels declined in all of these wells during the mine-dewatering operation. These facts tend to prove an interconnection of the solution cracks tapped by the wells and the mine-opening system.

Based on available water-level and chemical data, and long proven and accepted geohydrologic principals of groundwater occurrence and movement, the water level-contamination potential relationship map shown in figure 5 was constructed. In this interpretation the assumption was made that the water table would continue to effectively rise or fall as a unit in the future in response to recharge from precipitation, and that the relative position of the zone of contamination hazard would remain fairly fixed in shape and extent until the pre-mining water table illustrated in figure 2 was again realized at some time in the future. Once this has happened, the general direction of groundwater flow from the area of the mine should be to the east toward the Galena River. However, in July of 1968 the groundwater gradient was both west and east as is shown in figure 3. Although the gradients prior to that time during the

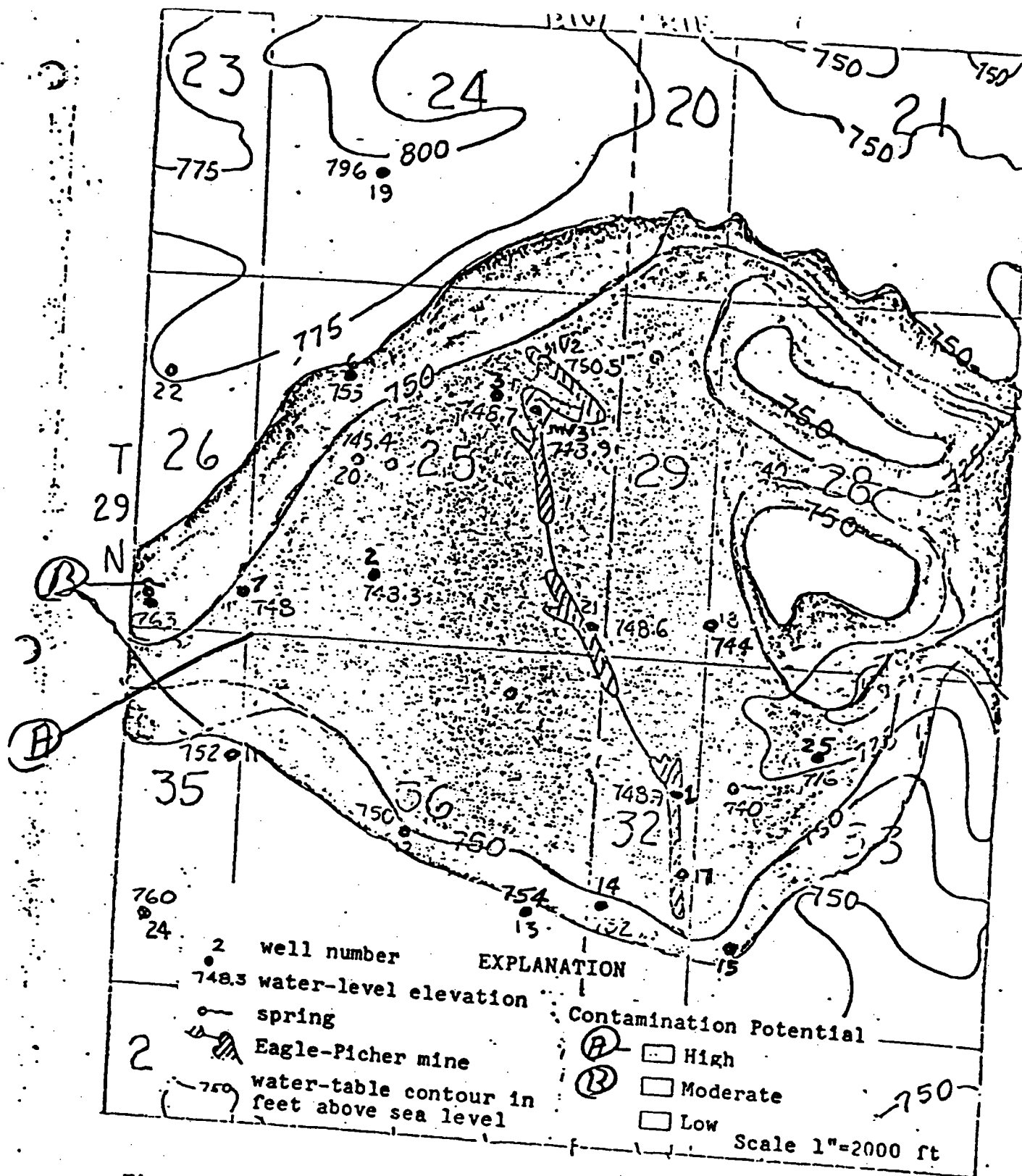


Figure 5. Water level-contamination potential relationship in vicinity of Eagle-Picher Mine operation

period when ore process waste water was being returned to the mine cannot be constructed from existing data, it is probable that the flow direction then was generally similar to that observed in July 1968, at least to as far back as January of 1968 when the first deterioration in groundwater quality was observed in the area.

A number of farm wells located within a mile or more radius of the mine had to be deepened, some to a depth of as much as 300 feet, during the 1948-1966 period in order to insure a continuing supply of water for farm and home use while the mine dewatering operation existed. This is not the first time that such deepening has been necessary, however, as is indicated in the following excerpt from an old Water Survey Report written by Neil Simonds and L. T. LeBron, Jr. in 1934. At this time only shallow ore veins in the Galena area were being mined.

"A large proportion of the wells recorded in Vinegar Hill Township end in the Galena limestone. Those ending in the upper and flint (middle) layers of these units, although formerly good sources of supply, are now failing. Those in the lower layers furnish adequate supply. This rule fails when mining operations are carried on. The lower horizon in lead and zinc mining is an oil rock layer immediately underlying the Galena limestone. Mines are unwatered by pumping from a sump located at this depth. This affects surrounding wells sometimes at a distance of two miles. To avoid a possible failure from this cause, many new wells and some less recent, have been carried through the Galena into the Platteville limestone. These wells so located resist draining due to mining operations. Drilled wells of this type are largely between 100 and 200 feet in depth."

WATER CHEMICAL QUALITY CHANGE

It is believed significant to note that during the 1934 well survey of Vinegar Hill Township, which contains the Eagle-Picher mines in question, none of the data collected by our field engineers indicated that mining operations at that time were affecting groundwater chemical quality in the area. Neither in their well records (Appendix A), which were used in the present study to construct the water table map in figure 2, nor in our chemical analyses of water from this area for this general period of time (see SWS Analyses 80370, 88478, and 117,509 in Appendix A) can evidence be found of marked groundwater quality deterioration caused by mining operations within the area.

This has not been the case for the mine operation investigation made in 1968, however. All of the analyses (Appendix C) of water from wells near the mine that are within the high contamination potential area delineated using water-level data (see figure 5) show deterioration of normal water chemical quality. Also, some of the analyses revealed chemical constituents such as cyanide which are common to the ore process operation in question, but which are not normally present in natural groundwaters of this area.

Using available chemical analyses of groundwater samples collected from wells within the area, from the mine in question, and from the ore-process waste water being discharged into that mine, a chemical quality-contamination potential relationship was established which coincides with the contamination relationship obtained from the water-level part of the study. This relationship is given in figure 6. Near the edges of the study area, in locations where maximum dilution from uncontaminated groundwater from unaffected parts of the aquifer occurs, or in areas of weak geochemical control, there are a few questionable data points. It is probable that detailed future studies in these localized areas could further refine these interpretations.

The areas so delineated should be considered as potentially hazardous from a public health standpoint for as long in the future as pollution can be detected. Just how long this will be is not discernable from the data now available. According to Dr. T. E. Larson of our organization, the analyses of sludge obtained from one of the settling ponds and from one of the mine vent openings during our investigation (see Lab. Nos. 175689 and 176644 in Appendix C) suggest that the time required to completely clear up the effects within the aquifer of the ore treatment waste water added to the mine may be quite long. The following statement by Dr. Larson generally summarizes his opinion on this matter.

"The analysis (Lab. No. 175450) of the sample collected from the point of discharge to an abandoned mine shaft north of Galena shows it to be in the range of being saturated with a form of calcium sulfate. This supernatant, therefore, appears to be in equilibrium with the calcium oxide (CaO) and sulfate (as SO_3) shown to be present in the sludge from the settling pond (Lab. No. 175689).

If fresh water of low hardness were to be mixed or in contact with such sludge, calcium sulfate could be expected to be dissolved and increase the hardness of the water."

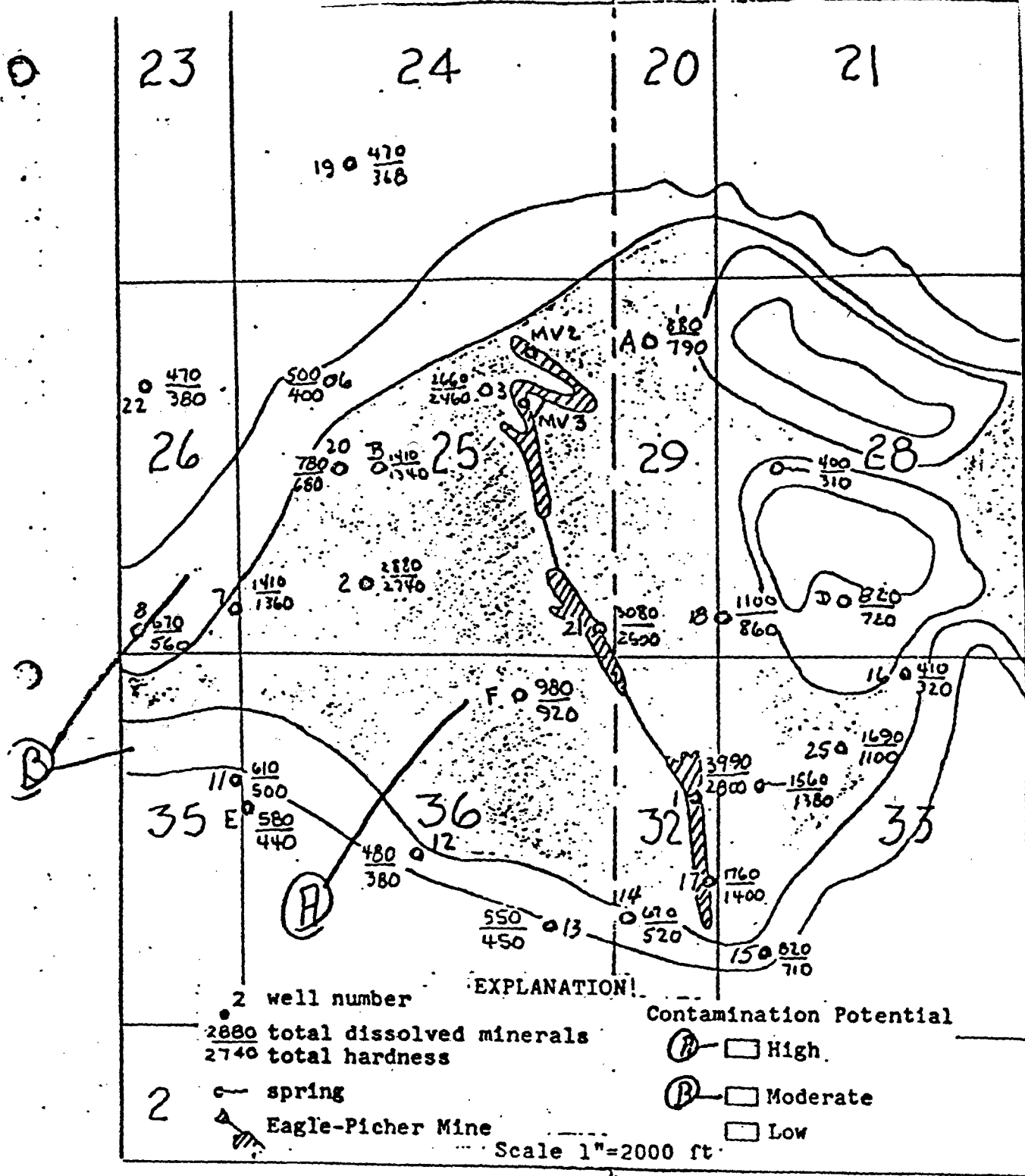


Figure 6. Chemical quality-contamination potential relationship in vicinity of Eagle-Picher Mine operation

SUMMARY AND CONCLUSIONS

The results of this study indicate that the return of ore processing waste water from the Eagle-Picher Industries, Inc. operation north of Galena in JoDaviess County to the abandoned mine workings in that area caused a serious deterioration of groundwater chemical quality in an area of approximately 2 square miles. This deterioration will gradually be eliminated now that this practice has been terminated and as precipitation recharge to the affected aquifer has an opportunity to dilute pollutants previously added to the aquifer. As long as pollution can be detected, it would be advisable to monitor select wells throughout the affected part of the area. Well owners within the high or moderate contamination potential areas shown on the maps included in this report should be alerted to the possible hazards of drinking water from the affected aquifer for so long as the water quality monitoring program proves the water unsafe for human consumption.

In the meantime, people within the affected area can obtain a safe water supply for domestic purposes from the underlying St. Peter Sandstone aquifer. This water-bearing unit is effectively sealed from the contaminated aquifer by impermeable rocks. Any such wells drilled to the St. Peter Sandstone should be cased and cemented through the entire Galena-Platteville limestone-dolomite section to insure that contamination from these formations will not enter the deeper-lying aquifer in the future.

Eagle Picher
Sidney, OH



TETRA TECH EMI INC.

MEMORANDUM

To: Jon Gulch, U.S. EPA On-Scene Coordinator, Region 5, Grosse Ile, Michigan
From: Stephen Wolfe, Tetra Tech EMI START, Cleveland, Ohio
RE: TDD S05-0603-003 Eagle Picher Michigan, Ohio, and Illinois Properties----Supplemental Cost Information Estimate—Sidney, Ohio property.
CC: Jason Barbeau and Elise Feldman (U.S. DOJ), Catherine Garypie (U.S. EPA), site files
Date: April 7, 2006

Dear Mr. Gulch,

A site investigation report was submitted for the above referenced project. After discussions with the U.S. Department of Justice, it was determined that a more extensive estimate of project cost structure would be needed for each property. This memorandum discusses the Sidney, Ohio property only. Please note that all costs **are estimates only**. The following estimates and recommended actions were made based on all available site information and past experience with similar projects. A full Site Assessment conducted on the property may yield additional information that would increase or decrease these estimated costs.

At the time of the initial report (March 24, 2006), limited information was available, except observations from a site visit. Subsequent to the initial report, Eagle Picher Holdings, Inc., provided additional files concerning the property in question and that data was used to prepare this Memorandum. The final costs listed below are an updated estimate based on the site visit and all information provided by Eagle Picher Holdings, Inc. to date. Receipt of any additional information may affect the final estimate.

Minimum Recommended Actions

At this time, due to the lack of information concerning site conditions, the following actions should be taken, at a minimum, at the Sidney, Ohio property:

- (1) A full site assessment should be conducted to clearly define site conditions and any potential environmental issues. The site assessment will include samples collected in the Miami River, along the drainage pathway from the storm water ditch outflow, along the drainage pathway located on the northern side of the property, soil samples in the lower twelve acre portion of the property, surface (and deep) soil samples in the upper three acres of fill area, and a geophysical survey to locate any additional buried drums.
- (2) The entire property should be fenced to help eliminate any future dumping of material on the property.
- (3) The upper 3 acres of fill area should be graded, fertilized and seeded.
- (4) Property maintenance should be maintained for a period of 20 years or until the State of Ohio is satisfied that no contamination is migrating off-site.
- (5) All drums and containers should be removed from the property.
- (6) Yearly soil samples should be collected and analyzed for metals and TCLP metals in any areas where vegetation will not grow to check for leaching of any underlying contamination.
- (7) Install groundwater monitoring wells to ensure that no contamination has reached the groundwater.
- (8) All environmental issues discovered during the site assessment will need to be addressed.

Justifications for Recommended Work

- (1) There is a large number of drums present on site as noted during the site visit. Most of the drums were empty; however, there is no way of knowing what was originally in the drums. A lot of the drums are the "closed end" type with bungholes which would indicate that some type of liquid was stored in them.
- (2) A document (OH000012.TIF) provided by Eagle Picher Holdings, Inc., lists random sand samples of the material that was dumped at the property. Several of the samples exceeded U.S. EPA recommended levels for industrial properties (1,000 ppm), and one sample in particular greatly exceeded this level (28,050 ppm).
- (3) A document (OH000914.TIF) provided by Eagle Picher Holdings, Inc (dated 1988) is a site inspection of the property. It lists in detail some items found on the property. In particular "about a dozen drums full of semi-liquid tary material"; ceramic tiles possibly containing asbestos; and what appeared to be black foundry sand was documented to be present on site.
- (4) There is no information on whether or not drums were buried on the property. The presence of drums throughout the property indicate that this is a possibility.
- (5) There is indication that people regularly trespass on the site as evidenced by candy wrappers, soda bottles, fire pits, and stacked wood.
- (6) At least one drum was found within 5 feet of the Miami River, other drums could potentially have rolled into the river itself.
- (7) Installation of monitoring wells is justified due to the proximity of the Miami River.
- (8) A "worst case scenario" cost obtained in a document provided by Eagle Picher Holdings, Inc. (page KS0000691) was \$750,000, more than twice the amount they are proposing to set aside for the property.

Site Assessment ^A			
GeoProbe	1 week	\$1,000/day	\$7,000
XRF	1 week	\$2,000	\$2,000
Boat and equipment	1 week	\$1,000	\$1,000
Soil Samples	20 (full scan)	\$1,500/each	\$30,000
	80 (metals only)	\$120/each	\$9,600
	10 (TCLP metals only)	\$180/each	\$1,800
Sediment Samples	20 (full scan)	\$1,500/each	\$30,000
River Samples	20 (full scan)	\$750/each	\$15,000
Drum Material Samples	20 (full scan)	\$1,500/each	\$30,000
GPR Survey			\$10,000
Trenching			\$15,000
Labor and misc Equipment			\$50,000
Total for Site Assessment			\$201,400
Soil Removal HAZARDOUS Waste upper three acres ^B			
Waste Disposal	9,680 yds ³	\$150/ yds ³	\$1,452,000
Labor and equipment			\$350,000
Backfill	9,680 yds ³	\$10/ yds ³	\$96,800
Set-up			\$75,000
Analytical costs			\$30,000
Contingency	20%		\$400,760
Total for soil removal as Hazardous waste^B			\$2,404,560
Total for soil removal as Hazardous waste worst case scenario^C			\$24,045,600
Soil Removal HAZARDOUS Waste remaining 12 acres ^D			
Waste Disposal	19,360 yds ³	\$150/ yds ³	\$2,904,000



Tree Removal			\$50,000
Labor and equipment			\$450,000
Backfill	19,360 yds ³	\$10/ yds ³	\$193,600
Vegetative restoration			\$300,000
Analytical costs			\$60,000
Contingency	20%		\$791,520
Total for soil removal as Hazardous waste (lower 12 acres)			\$4,749,120
Seeding Upper 3 acres only^E			
Labor and Equipment			\$100,000
Backfill	4,840 yds ³	\$10/ yds ³	\$48,400
Analytical costs			\$30,000
Fertilizer/seed			\$75,000
Upkeep	20 years	\$10,000/year	\$200,000
Monitoring well installation	20		\$100,000
Annual Sampling	20 years	\$750 per sample	\$375,000
Contingency	20%		\$167,680
Total for seeding upper 3-acres only			\$1,006,080
Fence Installation^F			
Total cost for fencing the entire property			\$100,000
Drum Removal^G			
Disposal			\$10,000
Labor and equipment			\$100,000
Contingency	20%		\$2,200
Total for drum removal			\$112,200
River Work^H			
Total for River Work			\$350,000

- A Site assessment would include using a Geoprobe to collect samples from about 100 locations on the property and scanning them with the XRF. ~100 soil samples would be sent for analytical confirmation and 20 of those for fullscan analysis and 10 for TCLP metals only. Sediment samples and co-located river samples will be collected to include far enough upstream/downstream (full scan analysis). Any material found in drums will be sampled at random (full scan analysis). GPR survey to attempt to locate additional buried drums and/or containers. Trenching to uncover drums/verify GPR results. Analytical costs based on laboratory published costs per sample per analysis. Labor and equipment costs are estimated based on current U.S. EPA contractor rates.
- B Removal work. Total excavation is based on the soil in the entire upper 3-acre portion needing to be excavated (to a depth of 2 feet) and disposed of as hazardous waste. Assumes no drums are found in the upper portion either during excavation or the site assessment. Analytical costs based on laboratory published costs per sample per analysis. Labor and equipment costs are estimated based on current U.S. EPA contractor rates.
- C Assumes the entire fill area must be excavated and disposed of as hazardous wastes. Reasons for this to happen include extremely high levels of contamination and/or the discovery of buried drums. The fill



area appears to be a depth of 20 feet. Analytical costs based on laboratory published costs per sample per analysis. Labor and equipment costs are estimated based on current U.S. EPA contractor rates.

- D Assumes that the entire 12 acre portion of property must be scraped to a depth of 1 foot (average). Also assumes that additional buried drums are not found on this portion of the property. Assumes that all drums and containers are visible or near the surface and no additional drums were discovered during the site assessment. Vegetative restoration includes planting of trees and shrubs to stabilize the low lying area. Analytical costs based on laboratory published costs per sample per analysis. Labor and equipment costs are estimated based on current U.S. EPA contractor rates.
- E Assumes that no material has to be removed and disposed of as hazardous waste. Work will consist of pushing the top 1 foot of soil and bringing in backfill to promote vegetation. 20 GW monitoring wells will be installed and sampled on a yearly basis for 20 years. Samples will be run for full scan analysis. The entire area will be seeded, and upkeep will be performed for 20 years to ensure that the cap remains intact. Upkeep will consist of mowing and fertilizing as necessary as well as annual sampling of GW monitoring wells. Analytical costs based on laboratory published costs per sample per analysis. Labor and equipment costs are estimated based on current U.S. EPA contractor rates.
- F Total length of fencing is assumed to be 3,600 linear feet (estimated outside border of property) fencing will consist of a 7 foot chainlink fence with 1 foot of barbwire and 1 large gate on Brooklyn Avenue. Fencing costs were estimated by the foot based on similar EPA projects. Analytical costs based on laboratory published costs per sample per analysis. Labor and equipment costs are estimated based on current U.S. EPA contractor rates.
- G Assumes that no additional drums are found during site assessment and all drums could be sent off site as non-hazardous (i.e. scrap metal debris). Large labor costs are due to the location of the drums and the necessary equipment to unearth/relocate them. Analytical costs based on laboratory published costs per sample per analysis. Labor and equipment costs are estimated based on current U.S. EPA contractor rates.
- H Assumes that some work will have to be performed if sediment samples reveal contamination. Analytical costs based on laboratory published costs per sample per analysis. Labor and equipment costs are estimated based on current U.S. EPA contractor rates.





TETRA TECH EM INC.

March 24, 2006,

Mr. Jon Gulch
On-Scene Coordinator
Emergency Response Branch 1
U.S. Environmental Protection Agency
9311 Groh Road
Grosse Ile, Michigan 48138

**Subject: Site Inspection Report
Eagle Picher Ohio/Michigan/Illinois Properties
Lot 5199 Sidney, Shelby County, Ohio
Technical Direction Document No. S05-0603-003
Tetra Tech Contract No. 68-W-00-129**

Dear Mr. Gulch:

The Tetra Tech EM Inc (Tetra Tech) Superfund Technical Assessment and Response Team (START) is submitting the enclosed site inspection report for the Eagle Picher facility located in Sidney, Ohio. If you have questions or comments regarding the report or require additional copies, Please contact me at (440) 234-0886 or Therese Gioia at (312) 201-7431.

Sincerely,

Stephen Wolfe
Tetra Tech START Project Manager

Enclosure

cc: Lorraine Kosik, U.S. EPA START Project Officer
Therese Gioia, Tetra Tech START Program Manager

**SITE INSPECTION REPORT
EAGLE PICHER OHIO/MICHIGAN/ILLINOIS PROPERTIES
LOT 5199
SIDNEY, SHELBY COUNTY, OHIO**

Prepared for

**U.S. ENVIRONMENTAL PROTECTION AGENCY
Region 5 Emergency Response Branch 1
9311 Groh Road
Grosse Ile, MI 48138**

TDD No.:	SO5-0603-003
Date Prepared:	March 24, 2006
Contract No.:	68-W-00-129
Prepared by:	Tetra Tech EM Inc.
Tetra Tech START Project Manager:	Stephen Wolfe
Telephone No.:	(440) 234-0886
U.S. EPA On-Scene Coordinator:	Jon Gulch
Telephone No.:	(734) 692-7686



TDD NO.: SO5-0603-003 (Eagle Picher Ohio/Michigan/Illinois properties/Sidney, Ohio location)

1.0 INTRODUCTION

Tetra Tech EM Inc. (TTEMI) Superfund Technical Assessment and Response Team (START) prepared this site inspection report in accordance with the requirements of Technical Direction Document (TDD) Number SO5-0603-003 issued by the U.S. Environmental Protection Agency (U.S. EPA). The scope of this TDD was to conduct site inspections at nine properties located in Ohio, Michigan, and Illinois. Specifically, START was tasked to assist the OSC in determining if Custodial Trust Funds set aside by the property debtor (Eagle Picher Holdings, Inc.) would be sufficient based on the following: review of all site files available at the time of the inspection; review of any historical reports for each site; and visual assessment/documentation of current property conditions. In addition to the visual property assessment, an X-Ray fluorescent instrument (Innov-X-Systems) was available to test soils for metal contamination at the Ohio and Michigan sites only.

Access for the site inspections was arranged between Catherine Garypie (Office of Regional Council, U.S. EPA, Region 5), Elise Feldman and Jason Barbeau (U.S. Department of Justice, Environmental Enforcement Section), and Patrick Brooks (legal counsel for Eagle Picher Holdings, Inc.).

Jon Gulch, Region 5 U.S. EPA On-Scene Coordinator (OSC) and Stephen Wolfe with TTEMI START performed all site inspections for the properties located in Ohio and Michigan. Doug Rommeck (Manager-Health, Safety and Environment) was the Eagle Picher representative for the Ohio and Michigan sites. Ken Brown and Raquel Cramlet with TTEMI START performed the inspection at the Illinois property. Greg Stauder of Greg Stauder & Co. was the representative for Eagle Picher at the Galena, Illinois property. Due to the timing of the inspections, no U.S. EPA representative was available to attend the site inspection in Galena, Illinois.

This report specifically addresses the property located on Brooklyn Avenue in Sidney, Shelby County, Ohio (lot number 5199, parcel numbers 01-22110481.001 and 02-018-025-326-0034). Attachments to the report include a topographic map of the site location (Attachment A), an aerial photograph of the site location (Attachment B), select photographs collected during the site inspection (Attachment C), and a collection of information provided by Eagle Picher Holdings, Inc (Attachment D).

2.0 INITIAL BACKGROUND INFORMATION

The following site summary was compiled by Laura Ripley (Environmental Scientist, U.S. EPA Region 5).

The property consists of approximately 15 largely undeveloped acres bordered by residential areas. A 3-acre portion of the property was formerly used as a sand fill for spent non-toxic foundry sand and cores from Ross Aluminum's adjacent local casting operation, which was sold in 2000. The sand fill is estimated to cover 3-acres to a depth of 15 feet. A vegetative layer has been placed over the sand fill, which is periodically inspected. The site is not considered suitable for construction purposes. A search was performed on the U.S. EPA's CERCLIS database and no results were found; however, without a specific site address this could not be confirmed. A multi system query conducted on ENVIROFACTS revealed that Ross Aluminum had 3 foundries located in Sidney, Ohio. These properties are located at 2322 Schenk Road (RCRA Handler ID OHR000019349), 815 North Oak Avenue (RCRA Handler ID OHD004264677, NPDES Permit OH0123081, TRI Facility ID 45365RSSLM70781), and 2500 Schenk Road (RCRA Handler ID OHD987001229, NPDES Permit OH0010570, TRI Facility ID 45365RSSLM2500S).

3.0 HISTORICAL FILE REVIEW

No historical files on this property were available for review prior to the site inspection. Ohio EPA Southwest District Office made available all of their files for Eagle Picher properties located in southwest Ohio; however, no information pertaining to this particular property was found.



Eagle Picher Holdings, Inc. made available files pertaining to the Sidney, Ohio location on March 23, 2006. One file of particular interest (OH000012.TIF) has papers pertaining to an agreement between Eagle Picher and Ross Aluminum (located on Oak Street in Sidney, Ohio) that allowed Ross aluminum to dispose of "non-toxic" foundry sand. As part of the agreement, Ross Aluminum was required to periodically test the sand they were sending to the Brooklyn Avenue sandfill. A few analytical results for sand that was sent to the sandfill in 1988 are: 001 composite-1,774 mg/kg lead, 005 composite- 28,050 mg/kg lead, and 011 bottom 2"-900 mg/kg lead.

4.0 SITE OBSERVATIONS

The property is approximately 15 acres in size. A fence is present along the 600 foot frontage on Brooklyn Avenue and the rest of the property is not fenced allowing complete access to the site. There is a gate in the fence; however there was no lock present at the time of the inspection and recent tire tracks in the vicinity of the gate indicate recent activity on site. Based on the presence of trash and debris (food wrappers and soda bottles), it can be concluded that trespassers have been on site.

Approximately three acres of the property, located adjacent to Brooklyn Avenue consists of fill material. There is little to no vegetation present in this portion of the property. There is an approximate 15 to 20 foot elevation change to a lower level of the property. It is assumed that the majority of the three acre portion of the property is fill material; however the total depth could not be confirmed. The majority of the surface soils were fine sand ranging in colors from white, tan, and black. Pieces of possible slag material, cores, and crucibles were evident throughout the site.

The lower portion of the property is wooded and the Miami River runs along the western border of the property. Approximately 200 drums and pails were visible, either partially buried or laying on the ground. All of the containers were rusted through and there was no way of discerning the original contents. Some of the drums were filled with what appeared to be a sandy material. One drum was located within 5 feet of the Miami River. Evidence of dumping was visible throughout the entire lower portion of the property (bricks, scrap metal, tires, etc). It was impossible to tell if some of the mounds were natural swales in the ground or were dump piles, unless there were visible drums poking through the mounds. Some areas had black fine sand on the surface.

A storm water drain empties onto and flows across the entire lower portion of the property (east to west) to the Miami River. Along the northern edge of the property, it appears that water migrated off the Eagle Picher property and may have deposited some sand material on the adjacent residential property.

Eleven soil/slag samples were collected from various parts of the property and were analyzed with the XRF unit. XRF results for 10 of the samples collected did not indicate any metal contamination on the property; however, XRF results for the 11th sample indicate that further assessment is warranted. The 11th sample was a piece of slag material which is very common all over the property, especially on the higher ground. The metals that were in highest concentrations were copper (greater than 10 percent), nickel (greater than 10 percent), and magnesium (above 8,000 ppm).

5.0 CONCLUSION

Eagle Picher Holdings, Inc., is proposing that a set aside of \$287,235 to be used over a period of 20 years would be sufficient for property remediation.

Based on available information at the time of this report the funds proposed will not adequately address the environmental conditions present on site. Using costs from similar U.S. EPA Region 5 removal sites associated with Eagle Picher as a comparison tool, it is estimated that a range of \$1.5 to \$3 million would be required to address all environmental threats to human health and the environment posed by the property located in Sidney, Ohio. These cost estimates are based on estimated costs to remove all drums and containers visible on site, assess (i.e. trenching) to locate and remove any additional buried drums and containers, assess the soils in the areas that drums are located as well as any piles of slag/sand material, assess the fill material on the 3-acre portion of



property where vegetation will not grow, determine if additional drums are buried in the 3-acre fill area of property, and assess the sediments in the Miami River. If the results of these additional assessments reveal more contamination, the cost for total site clean-up would likely increase beyond \$3 million.

Threat to human health and the environment is based on a lack of site security, the proximity of the Miami River, the presence of drums and other containers, and the presence of slag material with metal contamination. Analytical results for sand sent to the landfill in 1988 indicate that some of the sand had a high lead content (current U.S. EPA guide lines for lead in residential areas is 400 mg/kg, and industrial areas is 1,000 mg/kg) Fencing for the property is inadequate as only the frontage along Brooklyn Avenue is a barrier to site access. In addition, a storm water drainage pipe discharges onto the southern portion of the property, flows across the entire site, and enters the Miami River.



**ATTACHMENT A
TOPOGRAPHIC MAP**



TDD NO.: SO5-0603-003 (Eagle Picher Ohio/Michigan/Illinois properties/Sidney, Ohio location)



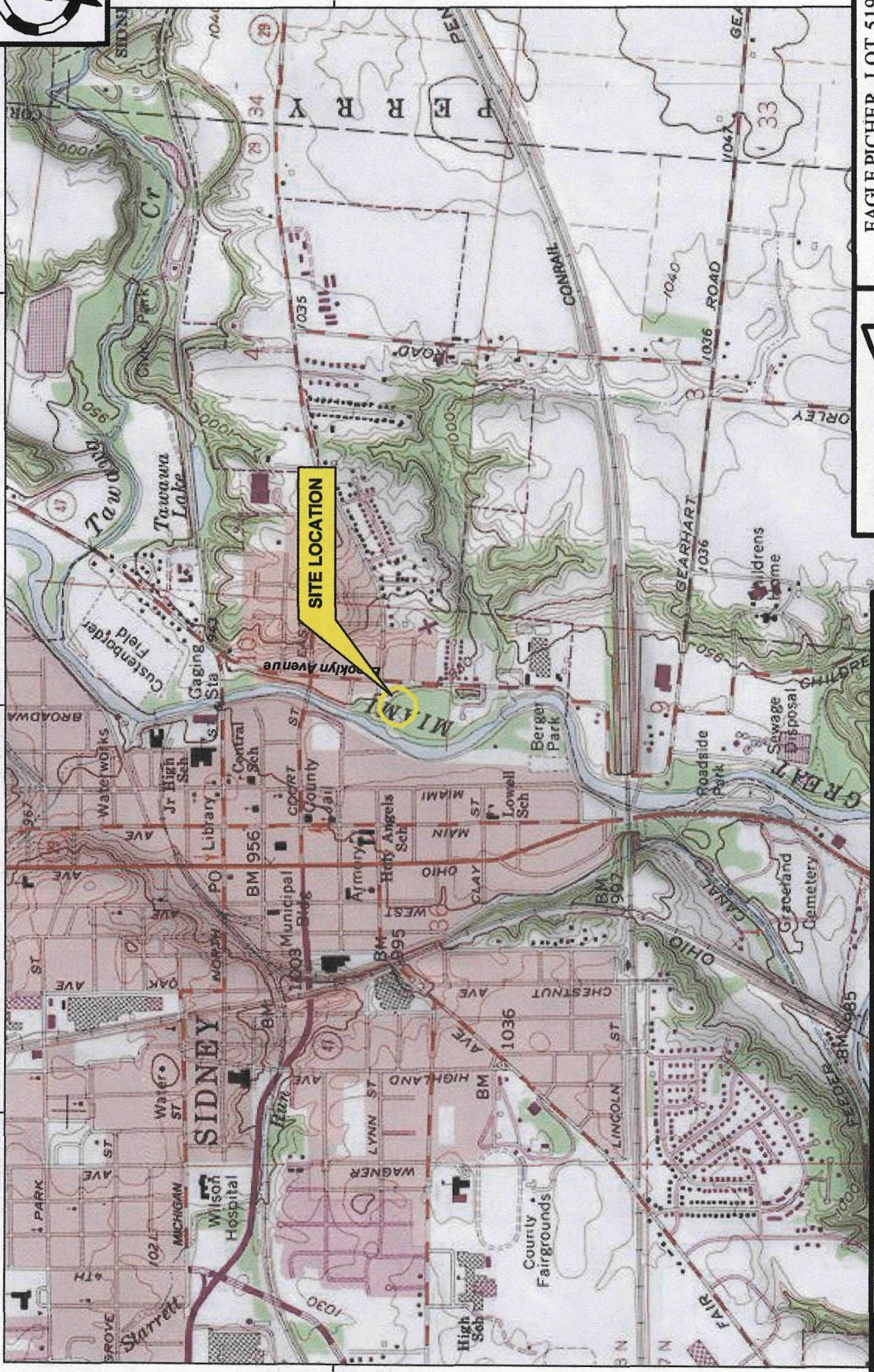
WGS84 84°08'00" W

84°09'00" W

84°10'00" W

40°17'00" N

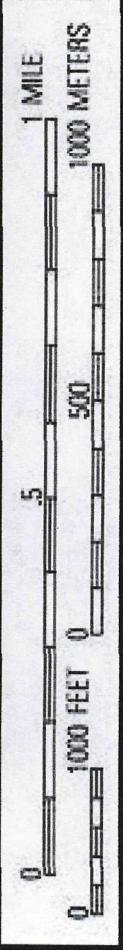
40°17'00" N



SITE LOCATION

EAGLE PICHER, LOT 5199
SIDNEY
SHELBY COUNTY, OHIO
PROJECT NO.: S05-0603-003

SITE LOCATION



Source: TOPO!®©2001 National Geographic

ATTACHMENT B
AERIAL MAP



TDD NO.: SO5-0603-003 (Eagle Picher Ohio/Michigan/Illinois properties/Sidney, Ohio location)



Visible drums and pails
located throughout the
wooded area

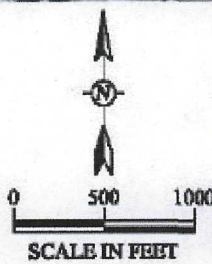
Site location
Lot 5199

Area with higher elevation

Brooklyn Ave

LOT 5199 BROOKLYN AVENUE
SIDNEY, SHELBY COUNTY, OHIO

AERIAL MAP



SCALE IN FEET

TETRA TECH EM INC.

G:\projects\10603003\010603003.dwg 03/13/2005 crr/caren CH

SOURCE: MODIFIED FROM U.S. GEOLOGICAL SURVEY 7.5-MINUTE SERIES MAP, QUARTER
QUADRANGLE, SIDNEY, OHIO

ATTACHMENT C
PHOTOGRAPHIC LOG



TDD NO.: SO5-0603-003 (Eagle Picher Ohio/Michigan/Illinois properties/Sidney, Ohio location)



Photograph No. 1 **Date:** March 20, 2006
TDD No.: S05-0603-003 **Orientation:** East
Location: Lot 5199 Brooklyn Avenue, Sidney, Ohio
Subject: Up the slope from the lower portion of the property.



Photograph No. 2 **Date:** March 20, 2006
TDD No.: S05-0603-003 **Orientation:** West
Location: Lot 5199 Brooklyn Avenue, Sidney, Ohio
Subject: Partially buried drum





Photograph No. 3 **Date:** March 20, 2006
TDD No.: S05-0603-003 **Orientation:** Down
Location: Lot 5199 Brooklyn Avenue, Sidney, Ohio
Subject: Bricks dumped on the property



Photograph No. 4 **Date:** March 20, 2006
TDD No.: S05-0603-003 **Orientation:** Southeast
Location: Lot 5199 Brooklyn Avenue, Sidney, Ohio
Subject: Outfall of stormwater drain from Brooklyn Avenue





Photograph No. 5 **Date:** March 20, 2006
TDD No.: S05-0603-003 **Orientation:** Southwest
Location: Lot 5199 Brooklyn Avenue, Sidney, Ohio
Subject: Drum in the woods



Photograph No. 6 **Date:** March 20, 2006
TDD No.: S05-0603-003 **Orientation:** West
Location: Lot 5199 Brooklyn Avenue, Sidney, Ohio
Subject: Drums in the woods





Photograph No. 7 **Date:** March 20, 2006
TDD No.: S05-0603-003 **Orientation:** South
Location: Lot 5199 Brooklyn Avenue, Sidney, Ohio
Subject: Tires in the wooded area



Photograph No. 8 **Date:** March 20, 2006
TDD No.: S05-0603-003 **Orientation:** Down
Location: Lot 5199 Brooklyn Avenue, Sidney, Ohio
Subject: Material coming up through the ground





Photograph No. 9 **Date:** March 20, 2006
TDD No.: S05-0603-003 **Orientation:** West
Location: Lot 5199 Brooklyn Avenue, Sidney, Ohio
Subject: Drum located within 5 feet of the Miami River



Photograph No. 10 **Date:** March 20, 2006
TDD No.: S05-0603-003 **Orientation:** Southeast
Location: Lot 5199 Brooklyn Avenue, Sidney, Ohio
Subject: Top of the filled area on Brooklyn Avenue. Very little vegetation.





Photograph No. 11 **Date:** March 20, 2006
TDD No.: S05-0603-003 **Orientation:** Northeast
Location: Lot 5199 Brooklyn Avenue, Sidney, Ohio
Subject: Top of the fill area. Stressed little to no vegetation on most of the area.
 Small vegetated portion shown for comparison.



Photograph No. 12 **Date:** March 20, 2006
TDD No.: S05-0603-003 **Orientation:** Down
Location: Lot 5199 Brooklyn Avenue, Sidney, Ohio
Subject: Bare spots upper on fill area.





Photograph No. 13 **Date:** March 20, 2006
TDD No.: S05-0603-003 **Orientation:** Southwest
Location: Lot 5199 Brooklyn Avenue, Sidney, Ohio
Subject: Bare area of the upper fill area



Photograph No. 14 **Date:** March 20, 2006
TDD No.: S05-0603-003 **Orientation:** West
Location: Lot 5199 Brooklyn Avenue, Sidney, Ohio
Subject: Bare area on the upper fill area. Houses are located across the Brooklyn Avenue.





Photograph No. 15 **Date:** March 20, 2006
TDD No.: S05-0603-003 **Orientation:** Northeast
Location: Lot 5199 Brooklyn Avenue, Sidney, Ohio
Subject: End of the fence along Brooklyn Avenue



Photograph No. 16 **Date:** March 20, 2006
TDD No.: S05-0603-003 **Orientation:** West
Location: Lot 5199 Brooklyn Avenue, Sidney, Ohio
Subject: Ditch along the northern portion of the property





Photograph No. 17 **Date:** March 20, 2006
TDD No.: S05-0603-003 **Orientation:** South
Location: Lot 5199 Brooklyn Avenue, Sidney, Ohio
Subject: Sidewall of the northern edge of property. Stressed vegetation on the adjacent private residential property.



ATTACHMENT D
DOCUMENT OH000012 PROVIDED BY EAGLE PICHER (PDF FORMAT)



N

The Best In Equipment For Your Transportation Needs

498-1151

January 24, 1986

Mr. Tom Kramer, President
Ross Aluminum Foundry
815 Oak Street
Sidney, OH 45365

Dear Mr. Kramer:

The Board of Health has notified us that we are not permitted to dump core sand or other toxic materials into our lake on Vandemark Road.

As a result of their action, we must ask that Ross Aluminum immediately discontinue dumping of any material into the lake.

Mr. Don Fair at the Board of Health has informed me that you may request a clearance, and if granted, you may resume dumping your material into the lake.

We apologize for any inconvenience this may cause. If we can assist you in any way, please let us know.

Sincerely,

Lloyd W. Schroer
President

kw

Enclosure

cc: Don Fair



Ross Aluminum Foundries

P.O. Box 609 Sidney, Ohio 45365-0609 937/492-4134 Fax 937/498-1883

February 22, 2000

Robert Mai, RS
Sidney-Shelby Cnty B of H
202 West Poplar St.
Sidney, Ohio 45365

RE: Sand Monofill at Brooklyn Avenue

Dear Mr. Mai:

The following analysis summary for spent foundry sand is being submitted for your review.

Samples were collected by Swank Consulting, Inc., and represent the foundry sand deposited on the Ross Aluminum Foundries, Division of Eagle Picher Ind. property located west of Brooklyn Avenue.

1-28-99		TOTAL PHENOLICS		0.12 mg/l
7-26-99		TOTAL PHENOLICS		N/D
11-11-99	Acidity - Total	8.79 S.U.	8.16 S.U.	8.10 S.U.
	Alkalinity	40.5	29.1	22.8
	Conductivity	196 mmhos	236	7.40
	pH	7.57 S.U.	7.50 S.U.	7.4 S.U.
	Sulfate	1269 mg/kg	1510	1186
	TDS	221 mg/kg	85	144
	Aluminum	9865 mg/kg	4305	2435
	Iron	11647 mg/kg	20721	15055
	Manganese	90.5 mg/kg	165	124
	Vanadium	4.92 mg/kg	4.70	3.66
	Zinc	91.5 mg/kg	52.6	22.0
1-22-00		Cyanide		N/D
		Fluoride		0.80 mg/l

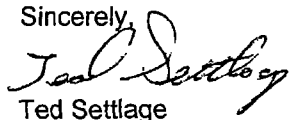
OH000013

Phenolics	0.1 mg/l
Arsenic	N/D
Barium	0.29 mg/l
Cadmium	N/D
Chromium	N/D
Lead	N/D
Mercury	N/D
Selenium	N/D
Silver	N/D

On January 28, 2000 Ross Aluminum was sold by Eagle Picher Ind., Inc. The Brooklyn property was not sold and remains an asset of Eagle Picher Ind., Inc. As of 1-28-2000 Ross Aluminum stopped sending spent foundry sand to this property. It is my understanding that Eagle Picher Ind. will be re-grading and capping the area with top soil to close its use as a monofill.

If you have any questions on any of this information please let me know.

Sincerely,



Ted Settlage

Coord. Env. & Safety


FILE NO: 60243

CLIENT NAME: Ross Aluminum Foundries

PROJECT NAME:

PAGE NO: 2 of 3

REPORT NUMBER: IS0207005

REVIEWER INITIALS: 

TEST NAME: ** GENERAL ANALYSIS **

SAMPLE MATRIX: SOLID

DATE SAMPLED: 01/22/00

SAMPLE ID:

DATE RECEIVED: 02/07/00

SAMPLE DESCRIPTION: BROOKLYN LANDFILL

LAB NUMBER: IS0207005

CODE	ANALYTE	PREPARATION METHOD	ANALYTICAL METHOD	DATE ANALYZED	ANALYST	RESULT	LIMIT OF DETECTION
IA240	CYANIDE - TOTAL		ASTM D3987	02/16/00	LG	N/D**	0.01 mg/l
IA360	FLUORIDE		ASTM D3987	02/17/00	ML	0.80** mg/l	0.20 mg/l
IA850	TOTAL PHENOLICS		ASTM D3987	02/15/00	EP	0.27** mg/l	0.01 mg/l

* N/D - None Detected

** - Water Extraction used.

FILE NO: 60243

CLIENT NAME : Ross Aluminum Foundries

PROJECT NAME :

PAGE NO : 3 of 3

REPORT NUMBER: IS0207005

REVIEWER INITIALS 

TEST NAME : ** TCLP Metals **

SAMPLE MATRIX : TCLP EXTRACT

SAMPLE ID :

SAMPLE DESCRIPTION : BROOKLYN LANDFILL

LAB NUMBER : IS0207005

EXTRACTION METHOD : EPA 1311

DATE SAMPLED: 01/22/00

DATE RECEIVED: 02/07/00

DATE EXTRACTED : 02/14/00

DATE ANALYZED: 02/14/00

ANALYST: RJE

EPA HW NO*	ANALYTE	METHOD	RESULT (mg/l)	REGULATORY LIMIT (mg/l)	LIMIT OF DETECTION (mg/l)
D004	ARSENIC	EPA 6010	N/D	5.0	0.10
D005	BARIUM	EPA 6010	0.29	100.0	0.01
D006	CADMIUM	EPA 6010	N/D	1.0	0.01
D007	CHROMIUM	EPA 6010	N/D	5.0	0.01
D008	LEAD	EPA 6010	N/D	5.0	0.05
D009	MERCURY	EPA 7470	N/D	0.2	0.002
D010	SELENIUM	EPA 6010	N/D	1.0	0.10
D011	SILVER	EPA 6010	N/D	5.0	0.01

* EPA's Hazardous Waste Number

* N/D - None Detected

OH000016

FILE NO: 60243

PAGE NO: 2 of 4

CLIENT NAME: Ross Aluminum Foundries

REPORT NUMBER: IS1111033

PROJECT NAME:

REVIEWER INITIALS: *gpc*

TEST NAME: ** GENERAL ANALYSIS **

SAMPLE MATRIX: SOLID

DATE SAMPLED: 11/11/99

SAMPLE ID:

DATE RECEIVED: 11/11/99

SAMPLE DESCRIPTION: SAND - PLANT

LAB NUMBER: IS1111033

CODE	ANALYTE	PREPARATION METHOD	ANALYTICAL METHOD	DATE ANALYZED	ANALYST	RESULT	LIMIT OF DETECTION
IA010	ACIDITY - TOTAL		SM 2310 B	12/03/99	JAE	8.79 S.U.	2.0 S.U.
IA030	ALKALINITY - TOTAL		SM 2320 B	11/12/99	FS	40.5* mg/kg	2.0 mg/kg
IA270	CONDUCTIVITY		EPA 9050	11/12/99	FS	196 mmhos/cm	2.0 mmhos/cm
IA590	pH		EPA 150.1	11/12/99	FS	7.57 S.U.	0.01 S.U.
IA720	SULFATE (as SO4)	EPA 3050	EPA 6010 A	11/22/99	BJK	1269 mg/kg	108 mg/kg
IA800	TOTAL DISSOLVED SOLIDS (TDS)		EPA 160.1	11/19/99	JAE	221 mg/kg	1.0 mg/kg
IB010	ALUMINUM	EPA 3050	EPA 6010 A	11/22/99	BJK	9865 mg/kg	5.90 mg/kg
IB130	IRON	EPA 3050	EPA 6010 A	11/22/99	BJK	11647 mg/kg	1.97 mg/kg
IB160	MANGANESE	EPA 3050	EPA 6010 A	11/22/99	BJK	90.5 mg/kg	0.98 mg/kg
IB290	VANADIUM	EPA 3050	EPA 6010 A	11/22/99	BJK	4.92 mg/kg	0.98 mg/kg
IB300	ZINC	EPA 3050	EPA 6010 A	11/22/99	BJK	91.5 mg/kg	2.95 mg/kg

* As CaCO3

OH000017

FILE NO: 60243

CLIENT NAME: Ross Aluminum Foundries

PROJECT NAME:

PAGE NO: 4 of 4

REPORT NUMBER: IS1111033

REVIEWER INITIALS: *gme*

TEST NAME: ** GENERAL ANALYSIS **

SAMPLE MATRIX: SOLID

DATE SAMPLED: 11/11/99

SAMPLE ID:

DATE RECEIVED: 11/11/99

SAMPLE DESCRIPTION: SAND - LANDFILL 2

LAB NUMBER: IS1111035

CODE	ANALYTE	PREPARATION METHOD	ANALYTICAL METHOD	DATE ANALYZED	ANALYST	RESULT	LIMIT OF DETECTION
IA010	ACIDITY - TOTAL		SM 2310 B	12/03/99	JAE	8.10 S.U.	2.0 S.U.
IA030	ALKALINITY - TOTAL		SM 2320 B	11/12/99	FS	22.8* mg/kg	2.0 mg/kg
IA270	CONDUCTIVITY		EPA 9050	11/12/99	FS	235 mmhos/cm	2.0 mmhos/cm
IA590	pH		EPA 150.1	11/12/99	FS	7.40 S.U.	0.01 S.U.
IA720	SULFATE (as SO4)	EPA 3050	EPA 6010 A	11/22/99	BJK	1186 mg/kg	101 mg/kg
IA800	TOTAL DISSOLVED SOLIDS (TDS)		EPA 160.1	11/19/99	JAE	144 mg/kg	1.0 mg/kg
IB010	ALUMINUM	EPA 3050	EPA 6010 A	11/22/99	BJK	2435 mg/kg	5.49 mg/kg
IB130	IRON	EPA 3050	EPA 6010 A	11/22/99	BJK	15055 mg/kg	1.83 mg/kg
IB160	MANGANESE	EPA 3050	EPA 6010 A	11/22/99	BJK	124 mg/kg	0.92 mg/kg
IB290	VANADIUM	EPA 3050	EPA 6010 A	11/22/99	BJK	3.66 mg/kg	0.92 mg/kg
IB300	ZINC	EPA 3050	EPA 6010 A	11/22/99	BJK	22.0 mg/kg	2.75 mg/kg

* As CaCO3

OH000018

FILE NO: 60243

CLIENT NAME: Ross Aluminum Foundries

PROJECT NAME:

PAGE NO : 3 of 4

REPORT NUMBER: IS1111033

REVIEWER INITIALS: *gmc*

TEST NAME: ** GENERAL ANALYSIS **

SAMPLE MATRIX: SOLID

DATE SAMPLED: 11/11/99

SAMPLE ID:

DATE RECEIVED: 11/11/99

SAMPLE DESCRIPTION: SAND - LANDFILL 1

LAB NUMBER: IS1111034

CODE	ANALYTE	PREPARATION METHOD	ANALYTICAL METHOD	DATE ANALYZED	ANALYST	RESULT	LIMIT OF DETECTION
IA010	ACIDITY - TOTAL		SM 2310 B	12/03/99	JAE	8.16 S.U.	2.0 S.U.
IA030	ALKALINITY - TOTAL		SM 2320 B	11/12/99	FS	29.1* mg/kg	2.0 mg/kg
IA270	CONDUCTIVITY		EPA 9050	11/12/99	FS	236 mmhos/cm	2.0 mmhos/cm
IA590	pH		EPA 150.1	11/12/99	FS	7.50 S.U.	0.01 S.U.
IA720	SULFATE (as SO4)	EPA 3050	EPA 6010 A	11/22/99	BJK	1510 mg/kg	103 mg/kg
IA800	TOTAL DISSOLVED SOLIDS (TDS)		EPA 160.1	11/19/99	JAE	85.0 mg/kg	1.0 mg/kg
IB010	ALUMINUM	EPA 3050	EPA 6010 A	11/22/99	BJK	4305 mg/kg	5.63 mg/kg
IB130	IRON	EPA 3050	EPA 6010 A	11/22/99	BJK	20721 mg/kg	1.88 mg/kg
IB160	MANGANESE	EPA 3050	EPA 6010 A	11/22/99	BJK	165 mg/kg	0.94 mg/kg
IB290	VANADIUM	EPA 3050	EPA 6010 A	11/22/99	BJK	4.70 mg/kg	0.94 mg/kg
IB300	ZINC	EPA 3050	EPA 6010 A	11/22/99	BJK	52.6 mg/kg	2.82 mg/kg

* As CaCO3

OH000019



Ross Aluminum Foundries

P.O. Box 609 Sidney, Ohio 45365-0609 513/492-4134 Fax 513/498-1883

February, 3 1999

Joe E. Sargeant, R.S.
Director Of Environmental Health
Sidney-Shelby County board Of Health
202 West Poplar Street
Sidney, OH 45365

Dear Mr. Sargeant:

The following analysis summary for spent foundry sand is being submitted for your review.

Samples were collected by Swank Consulting, Inc., and analyzed by Brookside Laboratories, Inc., and represent the foundry sand deposited on the Ross Aluminum Foundries property located west of Brooklyn Avenue.

3-12-98	TCLP For Phenolics	2.03 mg/l
12-28-98	TCLP For Metals	
	Arsenic	N/D
	Barium	0.05 mg/l
	Cadmium	N/D
	Chromium	0.04 mg/l
	Cyanide (total)	N/D
	Fluoride	2.0 mg/l
	Lead	N/D
	Mercury	N/D
	Phenolics	0.05 mg/l
	Selenium	N/D
	Silver	N/D

If you have any questions or require additional information please let me know.

Sincerely,

Ted Settlege
Coordinator Environ. & Safety

F:\ATED\SHARED\110398.TAS

DIVISION OF
EAGLE EPICHER

OH000020

FILE NO: 60243

CLIENT NAME : Ross Aluminum Foundries

PROJECT NAME : Brooklyn Landfill

PAGE NO : 3 of 4

REPORT NUMBER: IS0107020

REVIEWER INITIALS: fnl

TEST NAME : ** TCLP Metals **

SAMPLE MATRIX : TCLP EXTRACT

SAMPLE ID :

SAMPLE DESCRIPTION : LANDFILL COMPOSITE

LAB NUMBER : IS0107020

EXTRACTION METHOD : EPA 1311

DATE SAMPLED: 12/28/98

DATE RECEIVED: 01/07/99

DATE EXTRACTED : 01/28/99

DATE ANALYZED: 01/27/99

ANALYST: ZLX/SRE

EPA HW NO*	ANALYTE	METHOD	RESULT (mg/l)	REGULATORY LIMIT (mg/l)	LIMIT OF DETECTION (mg/l)
D004	ARSENIC	EPA 200.9	N/D	5.0	0.04
D005	BARIUM	EPA 6010	0.05	100.0	0.02
D006	CADMIUM	EPA 6010	N/D	1.0	0.03
D007	CHROMIUM	EPA 6010	0.04	5.0	0.03
D008	LEAD	EPA 6010	N/D	5.0	0.10
D009	MERCURY	EPA 7471	N/D	0.0002	0.0002
D010	SELENIUM	EPA 200.9	N/D	1.0	0.05
D011	SILVER	EPA 7760	N/D	5.0	0.04

* EPA's Hazardous Waste Number

* N/D - None Detected

OH000021

FILE NO: 60243

CLIENT NAME : Ross Aluminum Foundries

PROJECT NAME : Brooklyn Landfill

PAGE NO : 4 of 4

REPORT NUMBER : IS0107020

REVIEWER INITIALS: **QA/QC REPORT****Duplicate Analysis**

ANALYTE	LAB NO.	ANALYST	RESULT	RESULT(DUP)	RPD
IA240 CYANIDE - TOTAL	DI1230015	CJH	<0.02 mg/l	<0.02 mg/l	0.0

Spike Recovery I

ANALYTE	LAB NO.	ANALYST	% RECOVERY
IA240 CYANIDE - TOTAL	LCS	CJH	90.6
IA360 FLUORIDE	IS0107020	MCW	105
IA850 TOTAL PHENOLICS	LCS	MCW	97.5
IB030 ARSENIC	IS0107020	SRE	81.4
IB040 BARIUM	LCS	JAM	87.8
IB210 SELENIUM	IS0107020	SRE	94.5

Spike Recovery II

ANALYTE	LAB NO.	ANALYST	MS REC.	MSD REC.	RPD
IB040 BARIUM	IS0107020	JAM	82.9 %	84.3 %	1.6
IB060 CADMIUM	IS0107020	ZLX	78.2 %	78.7 %	0.6
IB090 CHROMIUM-TOTAL	IS0107020	ZLX	79.4 %	79.3 %	0.1
IB140 LEAD	IS0107020	ZLX	79.7 %	77.8 %	2.4
IB170 MERCURY	IS0107020	ZLX	98.7 %	108 %	9.0



Kirk NationalLease Co.

Covers The Miles With Quality

August 17, 1988

Mr. Jim Renker
Quality Coordinator
Ross Aluminum Foundries
815 Oak Avenue
Sidney, OH 45365

Dear Jim:

Kirk NationalLease Co. is in agreement to sell Lot 51, located on Brooklyn Avenue in Sidney, to Ross Aluminum Foundries. The price for this property will be \$27,500. We have received \$1,000 earnest money from Ross Aluminum which leaves the remaining balance at \$26,500.

Per our conversation, we would like to have the purchase of this property completed by September 16, 1988. However, if there are any problems in meeting this date, please contact us and we will review the situation at that time. If we can assist you in any way, please don't hesitate to give us a call.

Sincerely,


James R. Harvey
Executive Vice President

kw

cc: Lloyd Schroer
Phil Lahrmer

#29/67

800 Vandemark Rd.

• P.O. Box 4369

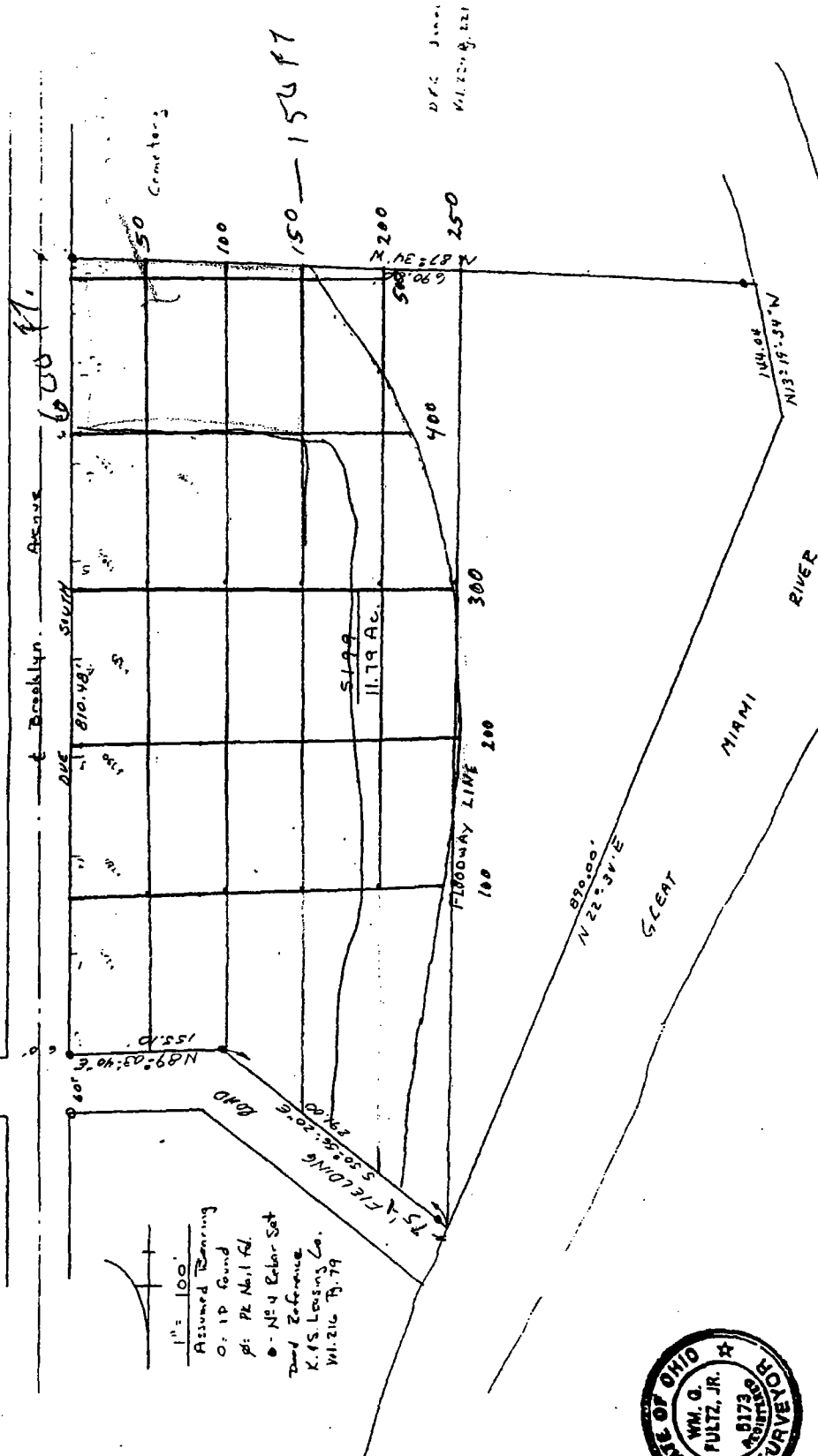
• Sidney, Ohio 45365

• Phone (513) 498-1151

Affiliated with: National Truck Leasing System

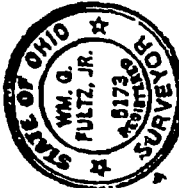
OH000023

K. F. S. LEASING COMPANY PLAT
 Part of Fra. Sec. 10, T1, R13, M.R.S.,
 City of Sidney, Clinton Twp., Shelby Co., Ohio



1" = 100'
 Assumed Bearing
 O. 1P found
 pt. PE Nail Ad.
 O. No. 4 Polar Set
 and Reference
 K.F.S. Leasing Co.
 W. 216 P. 79

D.F.S. Jones
 6/1/22, P. 221



SURVEYED 27 Aug., 1928
 William G. Fultz
 REG. SURVEYOR No 5173

492-9674

Vol. 19 P. 807



Ross Aluminum Foundries P.O. Box 609 Sidney, Ohio 45365-0609 513/492-4134

September 9, 1986

Lloyd W. Schroer, President
KIRK NATIONALEASE
P.O. Box 784
Sidney, OH 45365

Dear Mr. Schroer:

Ross Aluminum Foundries has been dumping clean spent Foundry sand on your South Brooklyn Avenue property in accordance with the Ross/Kirk Nationalease Agreement dated May 28, 1986.

Since that date, we have employed a Certified Laboratory to conduct periodic sampling and analysis of the Foundry sand going to the site.

In addition to sampling the materials at this location, we are also in the process of conducting site sampling to certify Ross compliance to the contract.

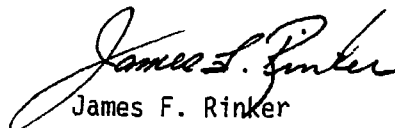
The writer accompanied a Laboratory Representative to the dump site on September 5, 1986 to observe conditions and sampling technique. We noticed some things I will pass on to you for your information:

1. Some person(s) have used this site to dump automobile tires, both on the south side and the southeast corner of the fill area.
2. There is evidence of several truckloads of a gray lightweight material that resembles airfloated clay in chunk and powder forms. There were several aerosol cans mixed in with this material that had contained laquer and at least one can for "thinsit" paint thinner.

We appreciate the opportunity of working with Kirk and felt you would like to know what we had seen.

Sincerely,

ROSS ALUMINUM FOUNDRIES


James F. Rinker

JFR;djm

XC: File

OH000025

LAW OFFICES
ELSASS, SCHMITT, WALLACE & CO., L.P.A.

101 SOUTH OHIO AVENUE
FIRST BORDER SAVINGS BUILDING
POST OFFICE BOX 499
SIDNEY, OHIO 45365

(513) 492-6191
(OHIO) 800-821-8362

EUGENE P. ELSASS
JOHN D. SCHMITT
RICHARD H. WALLACE
STANLEY R. EVANS
KEITH M. SCHNELLE

E. J. GARMHAUSEN
(1913-1972)

June 2, 1986

Mr. James Rinker
Quality Coordinator
Ross Aluminum Foundries
P. O. Box 609
Sidney, Ohio 45365

Re: Ross Aluminum Foundries - Kirk
Nationalease Co.

Dear Jim:

I am pleased to enclose an original copy of the agreement entered into between the above-captioned parties.

Thanks for your cooperation.

Very truly yours,


Richard H. Wallace

RHW/jm
Encl.

OH000026

AGREEMENT

This Agreement made and concluded this 28th day of May, 1986 by and between Ross Aluminum Foundries, a division of Eagle Picher Industries (hereinafter "Ross"), and Kirk National Lease Co., an Ohio corporation (hereinafter "Kirk").

W I T N E S S E T H :

WHEREAS, Kirk owns certain property located on Brooklyn Avenue in the City of Sidney, Shelby County, Ohio that is suitable for the disposal of certain industrial waste materials; and

WHEREAS, Ross conducts a foundry operation in Shelby County, Ohio and is desirous of obtaining a site to dispose of certain industrial substances (to wit: foundry sand) on the premises owned by Kirk; and

WHEREAS, Kirk is willing to permit Ross to dispose of certain materials on the site subject to certain terms and conditions.

NOW, THEREFORE, the parties agree as follows:

1. Kirk hereby agrees to permit Ross to dispose of foundry sand that does not contain toxic substances on its Brooklyn Avenue property. The consent given by Kirk is conditioned on and subject to the initial approval of the Board of Health of Shelby County, Ohio and the absence of any further action by the Board of Health to withdraw its approval.

2. Ross agrees to comply with the terms and conditions of the Board of Health authorization dated February 26, 1986, a copy of which is attached hereto and marked as Exhibit "A," and any further authorization. Ross further agrees to obtain any and all permits and/or approvals required

from the Board of Health, the State of Ohio, the U.S. or Ohio Environmental Protection Agencies or any other administrative agency having jurisdiction or authority over either the disposal site or the disposed materials.

3. Ross agrees to assume any and all liability and damages which may arise as a result of the disposal of any substance or material from Ross at the Brooklyn Avenue property. In the event a governmental agency requires any treatment to or clean up of the disposed substances on the Brooklyn Avenue property, Ross will agree to assume such responsibilities and pay such expenses and costs that are associated with that portion of the material deposited at the site by Ross.

4. This Agreement may be terminated by either party upon notifying the other party in writing no less than sixty (60) days prior to the date of termination. Termination of this Agreement shall not affect or in any manner discharge the continuing obligations of Ross under Sections 2 and 3 of this Agreement.

IN WITNESS WHEREOF, the parties have hereunto set their hands this

28th day of May, 1986.

In the presence of:

ROSS ALUMINUM FOUNDRIES, A DIVISION OF
EAGLE Picher INDUSTRIES

P. W. Hall
James F. Picher

By: *J. E. Kramer*
Its: *President*

KIRK NATIONALEASE CO.

Alvin Paulsen
Judy Weyer

By: *Lloyd W. Schroer*
Lloyd W. Schroer, President

A/N1

Board of Health

SHELBY COUNTY AND SIDNEY, OHIO
COURT HOUSE
PHONE: 498-7249
SIDNEY, OHIO 45365

February 26, 1986

Kirk Nationalease
Mr. Lloyd Schroer
Vice President Operations
P.O. Box 784
Sidney, Ohio 45365

Re: Foundry Sand Disposal

Dear Mr. Schroer:

The disposal of fly ash and foundry sand devoid of toxic substances can be use as fill material in areas not subjected to flooding, or in ponded water, streams or the water table. The area owned by Kirk Nationalease on Brooklyn Avenue has been used for that purpose and at this time appears to be satisfactory with this office.

Sincerely,

Richard H. Breece, M.D.

Richard H. Breece, M.D.
Health Commissioner

Donald L. Fair, R.S.

Donald L. Fair, R.S.
Administrative Sanitarian

DLF:lsn
cc: OEPA,
Mr. Joe Moore
Ross Aluminum Foundries,
Mr. Jim Ricker

EXHIBIT "A"

OH000029

LAW OFFICES
ELSASS, SCHMITT, WALLACE & CO., L.P.A.

101 SOUTH OHIO AVENUE
FIRST BORDER SAVINGS BUILDING
POST OFFICE BOX 499
SIDNEY, OHIO 45365

(513) 492-6191
(OHIO) 800-821-6362

EUGENE P. ELSASS
JOHN D. SCHMITT
RICHARD H. WALLACE
STANLEY R. EVANS
KEITH M. SCHNELLE
LOUIS M. BEST

E. J. GARMHAUSEN
(1913-1972)
TELECOPIER (513) 492-0976

September 23, 1988

Mr. Jim Rinker
Ross Aluminum Foundries
815 Oak Avenue
Sidney, OH 45365

Re: Title Insurance Policy on Lot 5199

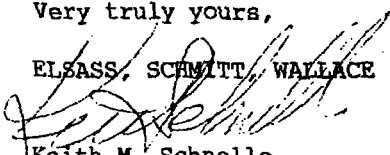
Dear Jim:

Enclosed please find a Title Insurance Policy as issued by Lawyers Title Insurance Corporation for the above-referenced property. Also enclosed please find invoice for the insurance.

If you should have any questions, please feel free to contact me.

Very truly yours,

ELSASS, SCHMITT, WALLACE & CO., L.P.A.


Keith M. Schnelle

KMS:lb
Enclosures (2)

OH000030

Lawyers Title Insurance Corporation

National Headquarters — Richmond, Virginia

Policy Number

85 - 00 - 694584

SUBJECT TO THE EXCLUSIONS FROM COVERAGE, THE EXCEPTIONS CONTAINED IN SCHEDULE B AND THE PROVISIONS OF THE CONDITIONS AND STIPULATIONS HEREOF, LAWYERS TITLE INSURANCE CORPORATION, a Virginia corporation, herein called the Company, insures, as of Date of Policy shown in Schedule A, against loss or damage, not exceeding the amount of insurance stated in Schedule A, and costs, attorneys' fees and expenses which the Company may become obligated to pay hereunder, sustained or incurred by the insured by reason of:

1. Title to the estate or interest described in Schedule A being vested otherwise than as stated therein;
2. Any defect in or lien or encumbrance on such title;
3. Lack of a right of access to and from the land; or
4. Unmarketability of such title.

IN WITNESS WHEREOF the Company has caused this policy to be signed and sealed, to be valid when Schedule A is countersigned by an authorized officer or agent of the Company, all in accordance with its By-Laws.

Lawyers Title Insurance Corporation

Robert C. Dawson

President

Attest:

Harold G. Lee

Secretary.

EXCLUSIONS FROM COVERAGE

The following matters are expressly excluded from the coverage of this policy:

1. (a) Governmental police power.
(b) Any law, ordinance or governmental regulation relating to environmental protection.
(c) Any law, ordinance or governmental regulation (including but not limited to building and zoning ordinances) restricting or regulating or prohibiting the occupancy, use or enjoyment of the land, or regulating the character, dimensions or location of any improvement now or hereafter erected on the land, or prohibiting a separation in ownership or a change in the dimensions or area of the land or any parcel of which the land is or was a part.
(d) The effect of any violation of the matters excluded under (a), (b), or (c) above, unless notice of a defect, lien or encumbrance resulting from a violation has been recorded at Date of Policy in those records in which under state statutes deeds, mortgages, lis pendens, liens or other title encumbrances must be recorded in order to impart constructive notice to purchasers of the land for value and without knowledge; provided, however, that without limitation, such records shall not be construed to include records in any of the offices of federal, state or local environmental protection, zoning, building, health or public safety authorities.
2. Rights of eminent domain unless notice of the exercise of such rights appears in the public records at Date of Policy.
3. Defects, liens, encumbrances, adverse claims, or other matters (a) created, suffered, assumed or agreed to by the insured claimant; (b) not known to the Company and not shown by the public records but known to the insured claimant either at Date of Policy or at the date such claimant acquired an estate or interest insured by this policy and not disclosed in writing by the insured claimant to the Company prior to the date such insured claimant became an insured hereunder; (c) resulting in no loss or damage to the insured claimant; (d) attaching or created subsequent to Date of Policy; or (e) resulting in loss or damage which would not have been sustained if the insured claimant had paid value for the estate or interest insured by this policy.

CONDITIONS AND STIPULATIONS

1. Definition of Terms

The following terms when used in this policy mean:

- (a) "insured": the insured named in Schedule A, and, subject to any rights or defenses the Company may have had against the named insured, those who succeed to the interest of such insured by operation of law as distinguished from purchase including, but not limited to, heirs, distributees, devisees, survivors, personal representatives, next of kin, or corporate or fiduciary successors.
- (b) "insured claimant": an insured claiming loss or damage hereunder.
- (c) "knowledge": actual knowledge, not constructive knowledge or notice which may be imputed to an insured by reason of any public records.
- (d) "land": the land described, specifically or by reference in Schedule A, and improvements affixed thereto which by law constitute real property; provided, however, the term "land" does not include any property beyond the lines of the area specifically described or referred to in Schedule A, nor any right, title, interest, estate or easement in abutting streets, roads, avenues, alleys, lanes, ways or waterways, but nothing herein shall modify or limit the extent to which a right of access to and from the land is insured by this policy.
- (e) "mortgage": mortgage, deed or trust, trust deed, or other security instrument.
- (f) "public records": those records which by law impart constructive notice of matters relating to said land.

(c) The Company shall have the right at its own cost to institute and without undue delay prosecute any action or proceeding or to do any other act which in its opinion may be necessary or desirable to establish the title to the estate or interest as insured, and the Company may take any appropriate action under the terms of this policy, whether or not it shall be liable thereunder, and shall not thereby concede liability or waive any provision of this policy.

(d) Whenever the Company, shall have brought any action or interposed a defense as required or permitted by the provision of this policy, the Company may pursue any such litigation to final determination by a court of competent jurisdiction and expressly reserves the right, in its sole discretion, to appeal from any adverse judgment or order.

(e) In all cases where this policy permits or requires the Company to prosecute or provide for the defense of any action or proceeding, the insured hereunder shall secure to the Company the right to so prosecute or provide defense in such action or proceeding, and all appeals therein, and permit the Company to use, at its option, the name of such insured for such purpose. Whenever requested by the Company, such insured shall give the Company all reasonable aid in any such action or proceeding, in effecting settlement, securing evidence, obtaining witnesses, or prosecuting or defending such action or proceeding, and the Company shall reimburse such insured for any expense so incurred.

2. Continuation of Insurance after Conveyance of Title

The Coverage of this policy shall continue in force as of Date of Policy in favor of an insured so long as such insured retains an estate or interest in the land, or holds an indebtedness secured by a purchase money mortgage given by a purchaser from such insured, or so long as such insured shall have liability by reason of covenants of warranty made by such insured in any transfer or conveyance of such estate or interest; provided, however, this policy shall not continue in force in favor of any purchaser from such insured of either said estate or interest or the indebtedness secured by a purchase money mortgage given to such insured.

3. Defense and Prosecution of Actions—Notice of Claim to be given by an Insured Claimant

(a) The Company, at its own cost and without undue delay, shall provide for the defense of an insured in all litigation consisting of actions or proceedings commenced against such insured or a defense interposed against an insured in an action to enforce a contract for a sale of the estate or interest in said land, to the extent that such litigation is founded upon an alleged defect, lien, encumbrance, or other matter insured against by this policy.

(b) The insured shall notify the Company promptly in writing (i) in case any action or proceeding is begun or defense is interposed as set forth in (a) above, (ii) in case knowledge shall come to an insured hereunder of any claim of title or interest which is adverse to the title to the estate or interest, as insured, and which might cause loss or damage for which the Company may be liable by virtue of this policy, or (iii) if title to the estate or interest, as insured, is rejected as unmarketable. If such prompt notice shall not be given to the Company, then as to such insured all liability of the Company shall cease and terminate in regard to the matter or matters for which such prompt notice is required; provided, however, that failure to notify shall in no case prejudice the rights of any such insured under this policy unless the Company shall be prejudiced by such failure and then only to the

4. Notice of Loss—Limitation of Action

In addition to the notices required under paragraph 3(b) of these Conditions and Stipulations, a statement in writing of any loss or damage for which it is claimed the Company is liable under this policy shall be furnished to the Company within 90 days after such loss or damage shall have been determined and no right of action shall accrue to an insured claimant until 30 days after such statement shall have been furnished. Failure to furnish such statement of loss or damage shall terminate any liability of the Company under this policy as to such loss or damage.

5. Options to Pay or Otherwise Settle Claims

The Company shall have the option to pay or otherwise settle for or in the name of an insured claimant any claim insured against or to terminate all liability and obligations of the Company hereunder by paying or tendering payment of the amount of insurance under this policy together with any costs, attorneys' fees and expenses incurred up to the time of such payment or tender of payment, by the insured claimant and authorized by the Company.

6. Determination and Payment of Loss

(a) The liability of the Company under this policy shall in no case exceed the least of:

- (i) the actual loss of the insured claimant; or
- (ii) the amount of insurance stated in Schedule A.

(b) The Company will pay, in addition to any loss insured against by this policy, all costs imposed upon an insured in litigation carried on by the Company for such insured, and all costs, attorneys' fees and expenses in litigation carried on by such insured with the written authorization of the Company.

(c) When liability has been definitely fixed in accordance with the conditions of this policy, the loss or damage shall be payable within 30 days thereafter.

THIS SHADED AREA FOR STATISTICAL PURPOSES ONLY AND IS NOT A PART OF THE POLICY

1 Policy Number
2 Property Type
3 County
4 Policy Amount
5 Premium
6 Rate Rule
7 Effective Date
8 Survey Amendment
9 Additional Chains

85								
1	2	3	4	5	6	7	8	9

Lawyers Title Insurance Corporation

OWNER'S POLICY

Schedule A

CASE NUMBER	DATE OF POLICY	AMOUNT OF INSURANCE
LTS-259	9-9-88 at 4:27 pm	\$27,500.00

THE POLICY NUMBER SHOWN ON THIS SCHEDULE MUST AGREE WITH THE PREPRINTED NUMBER ON THE COVER SHEET

POLICY NUMBER
85-00-694584

1. Name of Insured:

Eagle-Picher Industries, Inc.

2. The estate or interest in the land described herein and which is covered by this policy is:

fee simple

3. The estate or interest referred to herein is at Date of Policy vested in:

Eagle-Picher Industries, Inc., by a warranty deed dated September 9, 1988, presented for record September 9, 1988, and recorded in Deed Volume 167, Page 664, Shelby County, Ohio.


4. The land referred to in this policy is described as follows:

Situated in the City of Sidney, County of Shelby, and State of Ohio:

Being all of Inlot 5199 of the K & S Leasing Company Plat as recorded at Plat Volume 19, Page 807, Shelby County, Ohio.

A copy of the plat is attached hereto.

Lawyers Title Agency of Sidney, Inc.


Counter Signature Authorized Officer or Agent

Sidney, Ohio

Issued at (Location)

OH000033

Lawyers Title Insurance Corporation

OWNER'S POLICY

CASE NUMBER	DATE OF POLICY
LTS-259	9-9-88

THE POLICY NUMBER SHOWN ON THIS SCHEDULE
MUST AGREE WITH THE PREPRINTED NUMBER
ON THE COVER SHEET

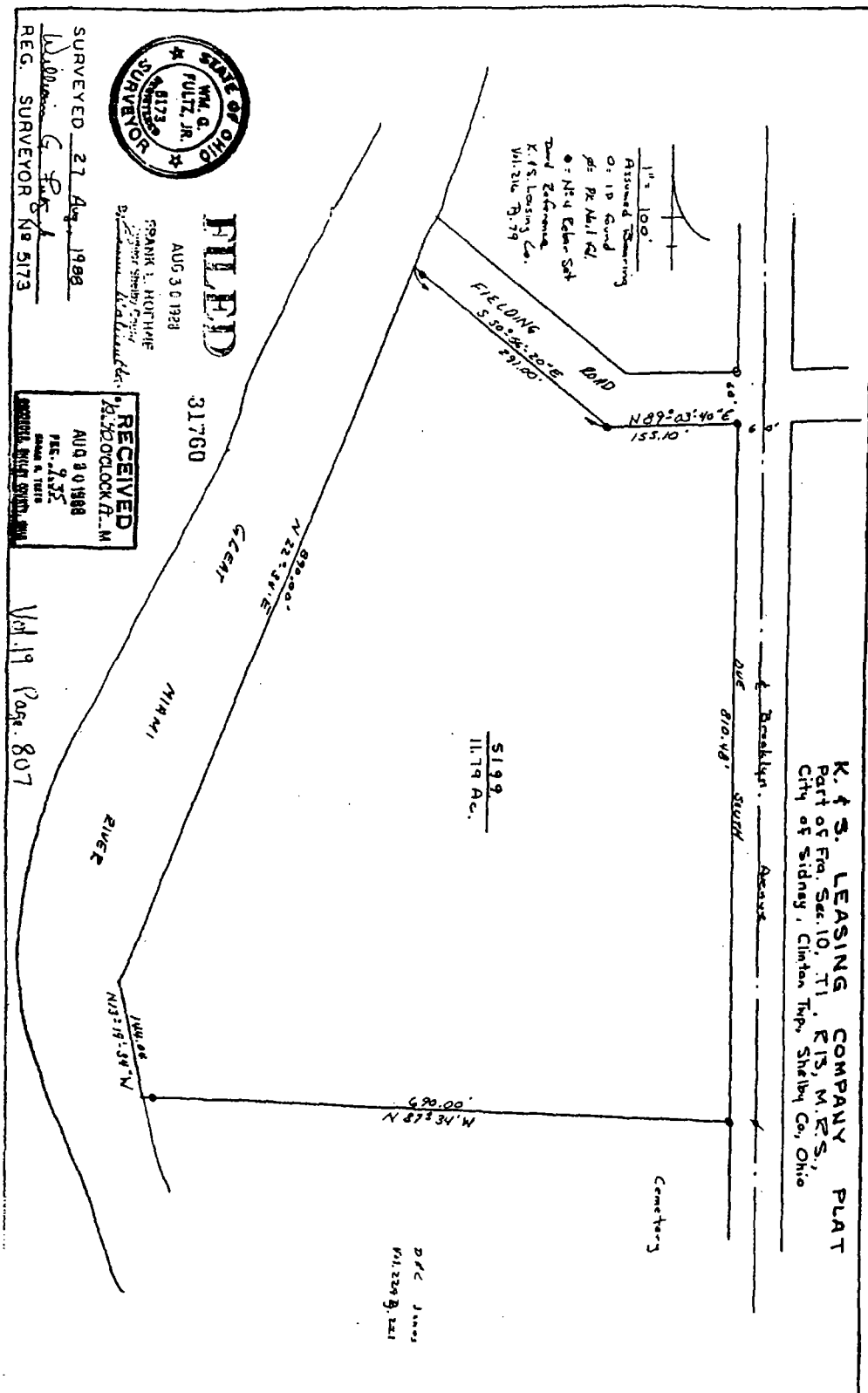
POLICY NUMBER
85-00-694584

Schedule B

This policy does not insure against loss or damage by reason of the following:

- a. The dower, curtesy, homestead, community property, or other statutory marital rights, if any, of the spouse of any individual insured.
- b. Real estate taxes for the calendar year 1988 and subsequent years, none of which are delinquent.
- c. Unmatured installments of special assessment for Sidney lighting purposes.
- d. Assessments, if any, which have not been certified to the County Auditor.
- e. Any lien, or right to a lien, for services, labor, or materials, heretofore or hereafter furnished, imposed by law, and not shown on the public records.
- f. Rights or claims of parties in possession and easements, or claims of easements not shown by the public records, boundary line disputes, overlaps, encroachments, and any matters of record which would be disclosed by an accurate survey of and inspection of the premises.
- g. Attention is directed to the fact that the insured premises is located within the flood hazard area of the Great Miami River and subject to the flood zone requirements and provisions of all applicable governmental authorities.

OH000034



CONDITIONS AND STIPULATIONS—CONTINUED

7. Limitation of Liability

No claim shall arise or be maintainable under this policy (a) if the Company, after having received notice of an alleged defect, lien or encumbrance insured against hereunder, by litigation or otherwise, removes such defect, lien or encumbrance or establishes the title, as insured, within a reasonable time after receipt of such notice; (b) in the event of litigation until there has been a final determination by a court of competent jurisdiction, and disposition of all appeals therefrom, adverse to the title, as insured, as provided in paragraph 3 hereof; or (c) for liability voluntarily assumed by an insured in settling any claim or suit without prior written consent of the Company.

8. Reduction of Liability

All payments under this policy, except payments made for costs, attorneys' fees and expenses, shall reduce the amount of the insurance pro tanto. No payment shall be made without producing this policy for endorsement of such payment unless the policy be lost or destroyed, in which case proof of such loss or destruction shall be furnished to the satisfaction of the Company.

9. Liability Noncumulative

It is expressly understood that the amount of insurance under this policy shall be reduced by any amount the Company may pay under any policy insuring either (a) a mortgage shown or referred to in Schedule B hereof which is a lien on the estate or interest covered by this policy, or (b) a mortgage hereafter executed by an insured which is a charge or lien on the estate or interest described or referred to in Schedule A, and the amount so paid shall be deemed a payment under this policy. The Company shall have the option to apply to the payment of any such mortgages any amount that otherwise would be payable hereunder to the insured owner of the estate or interest covered by this policy and the amount so paid shall be deemed a payment under this policy to said insured owner.

10. Apportionment

If the land described in Schedule A consists of two or more parcels which are not used as a single site, and a loss is established affecting one or more of said parcels but not all, the loss shall be computed and settled on a pro rata basis as if the amount of insurance under this policy was divided pro rata as to the value on Date of Policy of each separate parcel to the whole, exclusive of any improvements made subsequent to Date of Policy, unless a liability or value has otherwise been agreed upon as to each such parcel by the Company and the insured at the time of the issuance of this policy and shown by an express statement herein or by an endorsement attached hereto.

11. Subrogation Upon Payment or Settlement

Whenever the Company shall have settled a claim under this policy, all right of subrogation shall vest in the Company unaffected by any act of the insured claimant. The Company shall be subrogated to and be entitled to all rights and remedies which such insured claimant would have had against any person or property in respect to such claim had this policy not been issued, and if requested by the Company, such insured claimant shall transfer to the Company all rights and remedies against any person or property necessary in order to perfect such right of subrogation and shall permit the Company to use the name of such insured claimant in any transaction or litigation involving such rights or remedies. If the payment does not cover the loss of such insured claimant, the Company shall be subrogated to such rights and remedies in the proportion which said payment bears to the amount of said loss. If loss should result from any act of such insured claimant, such act shall not void this policy, but the Company, in that event, shall be required to pay only that part of any losses insured against hereunder which shall exceed the amount, if any, lost to the Company be reason of the impairment of the right of subrogation.

12. Liability Limited to this Policy

This instrument together with all endorsements and other instruments, if any, attached hereto by the Company is the entire policy and contract between the insured and the Company.

Any claim of loss or damage, whether or not based on negligence, and which arises out of the status of the title to the estate or interest covered hereby or any action asserting such claim, shall be restricted to the provisions and conditions and stipulations of this policy.

No amendment of or endorsement to this policy can be made except by writing endorsed hereon or attached hereto signed by either the President, a Vice President, the Secretary, an Assistant Secretary, or validating officer or authorized signatory of the Company.

13. Notices, Where Sent

All notices required to be given the Company and any statement in writing required to be furnished the Company shall include the number of this policy and shall be addressed to its Corporate Headquarters, 6630 West Broad Street, mailing address: P.O. Box 27567, Richmond, Virginia 23261.

Lawyers Title Insurance Corporation

National Headquarters — Richmond, Virginia

Service available throughout the United States, Canada, Puerto Rico, the Bahamas, and the U.S. Virgin Islands.



National Division, Branch and Agency offices and Approved Attorneys are located throughout the operating territory.

Lawyers Title Insurance Corporation

National Headquarters — Richmond, Virginia

Lawyers Title
Insurance Corporation
National Headquarters
Richmond, Virginia

Policy
of
Title Insurance

A word of thanks to our insured

As we make your policy a part of our permanent records, we want to express our appreciation of this evidence of your faith in Lawyers Title Insurance Corporation.

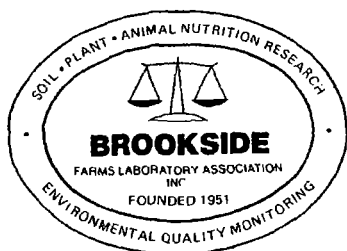
There is no recurring premium.

This policy provides valuable title protection and we suggest you keep it in a safe place where it will be readily available for future reference.

If you have any questions about the protection provided by this policy or wish to contact us for any other reason, contact the office that issued your policy or you may write to:

Consumer Affairs Department
Lawyers Title Insurance Corporation
P.O. Box 27567
Richmond, Virginia 23261

OH000037



BROOKSIDE FARMS LABORATORY ASS'N., INC.
ENVIRONMENTAL & INDUSTRIAL DIVISION
NEW KNOXVILLE, OH 45871

(419) 753-2448

August 30, 1988

LAM VAN HO, Ph.D.
DIVISION DIRECTOR

Mr. Jim Rinker, Quality Coordinator
Ross Aluminum Foundries
707-815 N. Oak Ave.
P.O. Box 609
Sidney, OH 45365

Dear Jim,

Re: Recheck of Iron and Barium analysis from composite samples.

As we expected, all high readings of Fe and Ba from analytical reports submitted to you on August 5, 1988 were lower than the actual concentrations because they exceeded the preset linear concentration range of our analytical instrumentation. The rechecked results are summarized as follows:

<u>Lab No.</u>	<u>Sample ID</u>	<u>Test Parameter</u>	<u>Reported Result (mg/kg)</u>	<u>Corrected Result (mg/kg)</u>
IE83017	001 Composite	Fe	133,290	170,800
IE83019	003 Composite	Fe	36,579	42,983
IE83021	005 Composite	Ba	1,562	3,288
IE83026	009 Composite	Fe	133,320	442,400
IE83029	011 (Bottom 2")	Fe	133,300	295,288

For your file, I am forwarding to you the revised reports. Please discard the previous submittal. Thank you for giving us the opportunity to serve you.

Respectfully submitted,

Lam

Lam V. Ho, Ph.D.
Director, EID

LVH/js

cc/Monte Swank

Enclosure

OH000038

BROOKSIDE FARMS LABORATORY ASSN. INC.
Environmental & Industrial Division
New Knoxville, Ohio 45871
(419) 753-2448

** ANALYSIS REPORT **

Ross Aluminum Foundries
707-815 N. Oak Avenue
P.O.Box 609
Sidney, OH 45365

File Number: 60243
Date recv'd: 07/19/88
Date rept'd: 08/05/88

EID Rep: Monte W. Swank
Attention: Mr. Jim Rinker

Lab Number		IE83017	IE83018
Sample Description		001 COMPOSITE	002 COMPOSITE
ARSENIC	mg/kg	12.9 *	6.55 *
BARIUM	mg/kg	306 *	652 *
CADMIUM	mg/kg	7.90 *	2.90 *
CHROMIUM - TOTAL	mg/kg	48.0 *	28.0 *
IRON	mg/kg	170,800 *	31843 *
LEAD	mg/kg	1774 *	847 *
MERCURY (Cold Vapor)	mg/kg	2.63	0.76
SELENIUM	mg/kg	0.30 *	.015 *
SILVER	mg/kg	2.0 *	1.0 *
EXTRACTABLE ORGANIC HALIDES (EOX)	mg/kg	< 3.0	< 3.0
ORGANIC CARBON, TOTAL (TOC)	%	4.29	3.94

* Results are on dry-weight basis.

Peter A. Conidakis / LHM
Peter A. Conidakis
Laboratory Manager

OH000039

BROOKSIDE FARMS LABORATORY ASSN. INC.
Environmental & Industrial Division
New Knoxville, Ohio 45871
(419) 753-2448

** ANALYSIS REPORT **

Ross Aluminum Foundries
707-815 N. Oak Avenue
P.O.Box 609
Sidney, OH 45365

File Number: 60243
Date recv'd: 07/19/88
Date rept'd: 08/05/88

EID Rep: Monte W. Swank
Attention: Mr. Jim Rinker

Lab Number		IE83019	IE83020
Sample Description		003 COMPOSITE	004 COMPOSITE
ARSENIC	mg/kg	4.68 *	3.34 *
BARIUM	mg/kg	193 *	107 *
CADMIUM	mg/kg	10.1 *	0.7 *
CHROMIUM - TOTAL	mg/kg	51.0 *	16.0 *
IRON	mg/kg	42,983 *	17050 *
LEAD	mg/kg	501 *	34.0 *
MERCURY (Cold Vapor)	mg/kg	0.56	0.34
SELENIUM	mg/kg	.020 *	.048 *
SILVER	mg/kg	< 1.0 *	< 1.0 *
EXTRACTABLE ORGANIC HALIDES (EOX)	mg/kg	< 3.0	< 3.0
ORGANIC CARBON, TOTAL (TOC)	%	2.84	1.68

* Results are on dry-weight basis.

Peter A. Conidaris / M
Peter A. Conidaris
Laboratory Manager

OH000040

BROOKSIDE FARMS LABORATORY ASSN. INC.
Environmental & Industrial Division
New Knoxville, Ohio 45871
(419) 753-2448

** ANALYSIS REPORT **

Ross Aluminum Foundries
707-815 N. Oak Avenue
P.O.Box 609
Sidney, OH 45365

File Number: 60243
Date recv'd: 07/19/88
Date rept'd: 08/05/88

EID Rep: Monte W. Swank
Attention: Mr. Jim Rinker

Lab Number		IE83021	IE83022
Sample Description		005 COMPOSITE	006 (0-6")
ARSENIC	mg/kg	2.53 *	0.63 *
BARIUM	mg/kg	3288 *	168 *
CADMIUM	mg/kg	30.3 *	1.70 *
CHROMIUM - TOTAL	mg/kg	36.0 *	20.0 *
CYANIDES - TOTAL	mg/kg	1.15	.675
IRON	mg/kg	16862 *	29669 *
LEAD	mg/kg	28050 *	97.0 *
MERCURY (Cold Vapor)	mg/kg	3.73	0.19
PHENOLS - TOTAL	mg/kg	0.47	0.30
SELENIUM	mg/kg	.024 *	.022 *
SILVER	mg/kg	1.0 *	< 1.0 *
EXTRACTABLE ORGANIC HALIDES (EOX)	mg/kg	< 3.0	< 3.0
ORGANIC CARBON, TOTAL (TOC)	%	5.51	0.93

* Results are on dry-weight basis.

Peter A. Conidaris
Peter A. Conidaris
Laboratory Manager

OH000041

BROOKSIDE FARMS LABORATORY ASSN. INC.
Environmental & Industrial Division
New Knoxville, Ohio 45871
(419) 753-2448

** ANALYSIS REPORT **

Ross Aluminum Foundries
707-815 N. Oak Avenue
P.O. Box 609
Sidney, OH 45365

File Number: 60243
Date recv'd: 07/19/88
Date rept'd: 08/05/88

EID Rep: Monte W. Swank
Attention: Mr. Jim Rinker

Lab Number	IE83026	IE83027
Sample Description	009 COMPOSITE	010 COMPOSITE
ARSENIC	mg/kg 51.6 *	6.15 *
BARIUM	mg/kg 8.50 *	73.0 *
CADMIUM	mg/kg < 0.5 *	0.6 *
CHROMIUM - TOTAL	mg/kg 3930 *	10.0 *
IRON	mg/kg 442,400 *	12021 *
LEAD	mg/kg 177 *	269 *
MERCURY (Cold Vapor)	mg/kg < 0.03	< 0.025
SELENIUM	mg/kg < 0.01 *	.029 *
SILVER	mg/kg 3.0 *	< 1.0 *

* Results are on dry-weight basis.

Peter A. Conidaris / w
Peter A. Conidaris
Laboratory Manager

OH000042

BROOKSIDE FARMS LABORATORY ASSN. INC.
Environmental & Industrial Division
New Knoxville, Ohio 45871
(419) 753-2448

** ANALYSIS REPORT **

Ross Aluminum Foundries
707-815 N. Oak Avenue
P.O.Box 609
Sidney, OH 45365

File Number: 60243
Date recv'd: 07/19/88
Date rept'd: 08/05/88

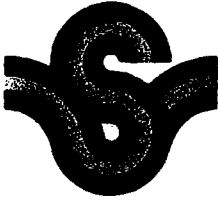
EID Rep: Monte W. Swank
Attention: Mr. Jim Rinker

Lab Number		IE83029	IE83030
Sample Description		011 (BOTTOM 2")	012 (TOP 3")
ARSENIC	mg/kg	3.91 *	1.37 *
BARIUM	mg/kg	200 *	24.0 *
CADMIUM	mg/kg	3.50 *	< 0.5 *
CHROMIUM - TOTAL	mg/kg	3290 *	16.0 *
IRON	mg/kg	295,288 *	11770 *
LEAD	mg/kg	900 *	55.0 *
MERCURY (Cold Vapor)	mg/kg	< 0.025	0.27
SELENIUM	mg/kg	.019 *	< 0.012 *
SILVER	mg/kg	6.0 *	< 1.0 *
EXTRACTABLE ORGANIC HALIDES (EOX)	mg/kg	< 3.0	< 3.0
ORGANIC CARBON, TOTAL (TOC)	%	0.81	2.44

* Results are on dry-weight basis.

Peter A. Conidaris / W
Peter A. Conidaris
Laboratory Manager

OH000043



City of Sidney

August 25, 1988

Mr. James F. Rinker
Quality Coordinator
Ross Aluminum Foundries
707 North Oak Avenue
Sidney, Ohio 45365

Dear Mr. Rinker:

The City staff has reviewed your request to fill area between Brooklyn Avenue and the Great Miami River. This area is zoned R-3, Multiple Family Residence District. Since you are not building any type of structure, the R-3 regulations do not prevent the filling of this area with foundry sand. Since a portion of this area, however, is within the flood plain, Chapter 1108 of the City Codified Ordinances does apply. Section 1108.07, specifies that a zoning certificate be obtained from the City Building Inspector prior to a development. There is no reason why a zoning certificate cannot be issued for the property in question provided that all sand placement is outside the floodway and that appropriate slopes are provided so as to prevent the sand from sliding into the floodway.

If you have any questions on this matter, please do not hesitate to contact me.

Sincerely,

Steven C. Husemann
City Manager

SCH/skc

Municipal Building, 201 West Poplar St., Sidney, Ohio 45365-2781, 513-498-2335

OH000044



Kirk NationalLease

The Best In Equipment For Your Transportation Needs

May 31, 1988

Mr. James F. Rinker
Ross Aluminum Foundries
P.O. Box 609
Sidney, OH 45365

Dear Mr. Rinker:

Ross Aluminum Foundries currently dumps foundry sand on our South Brooklyn Avenue property. At the present time, Kirk sees that the sand is leveled with a bulldozer.

Kirk has made arrangements to sell its bulldozer, and as of July 1, 1988, we will no longer be able to level the sand. If Ross agrees to take the responsibility of having the sand leveled, the sand can continue to be dumped on the property. Unfortunately, if Ross does not wish to do this, we must terminate our present agreement.

Our plans are to sell this property in the near future. If Ross would be interested in purchasing the property, please get in touch with me, as we will not be placing it with a real estate agent for several weeks.

I hope that we can work something out so that the sand can continue to be dumped on the property. Please contact me once you have had time to consider this matter.

Sincerely,

Lloyd W. Schroer

Lloyd W. Schroer
President

cm

cc: Jim Harvey

#15/95



Ross Aluminum Foundries

P.O. Box 609 Sidney, Ohio 45365-0609 513/492-4134 Fax 513/498-1883

Tuesday
June 14th, 1988

Lloyd Schroer, President
KIRK NATIONALEASE
800 Vandemark Road
Sidney, OH 45365

Dear Mr. Schroer:

Ross Aluminum Foundries is very appreciative of the opportunity to deposit spent foundry sand on your South Brooklyn Avenue property and for leveling of that sand with your bulldozer.

We will continue to dump sand on the South Brooklyn property and we have made arrangements for bulldozer service as directed in your letter of May 31, 1988.

Ross Aluminum Foundries will purchase the property at the mutually agreed price of thirty thousand dollars, payable as follows: One thousand dollars cash as earnest money and the balance of twenty nine thousand dollars at closing. The sales closing is contingent on the satisfactory environmental evaluation of the site. Should Ross determine that the site is not suitable for continued dumping of foundry sand the thousand dollar earnest money will be returned.

We request exclusive use of the property while we collect the necessary information to complete the transaction.

If you agree to these conditions, please sign a copy of this letter and return to me.

Sincerely,

James F. Rinker
Quality Coordinator

JFR/baj
xc: File (2)

Signature Kirk Nationalease

Date

DIVISION OF
SOLID STATE

OH000046

BROOKSIDE FARMS LABORATORY ASSN. INC.
Environmental & Industrial Division
New Knoxville, Ohio 45871
(419) 753-2448

** ANALYSIS REPORT **

Poss Aluminum Foundries
707-815 N. Oak Avenue
P.O. Box 600
Sidney, OH 45365

File Number: 60243
Date rec'd: 07/19/88
Date rept'd: 08/05/88

EID Rep: Monte W. Swank
Attention: Mr. Jim Rinker

Lab Number	IE83017	IE83018
Sample Description	001 COMPOSITE	002 COMPOSITE
ARSENIC	mg/kg 12.9 *	6.55 *
BARIUM	mg/kg 306 *	652 *
CADMIUM	mg/kg 7.90 *	2.90 *
CHROMIUM - TOTAL	mg/kg 48.0 *	28.0 *
IRON	mg/kg 133290 *	31843 *
LEAD	mg/kg 1774 *	847 *
MERCURY (Cold Vapor)	mg/kg 2.63	0.76
SELENIUM	mg/kg 0.30 *	.015 *
SILVER	mg/kg 2.0 *	1.0 *
EXTRACTABLE ORGANIC HALIDES (EOX)	mg/kg < 3.0	< 3.0
ORGANIC CARBON, TOTAL (TOC)	% 4.29	3.94

* Results are on dry-weight basis.

Peter A. Conidaris
Peter A. Conidaris
Laboratory Manager

OH000047

BROOKSIDE FARMS LABORATORY ASSN., INC.
Environmental & Industrial Division
New Knoxville, Ohio 45071
(419) 753-2448

** ANALYSIS REPORT **

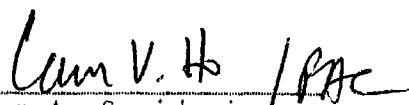
Ross Aluminum Foundries
707-915 N. Oak Avenue
P.O. Box 609
Sidney, OH 45365

File Number: 69240
Date rec'd: 07/19/88
Date rept'd: 08/05/88

FTD Rept: Monte W. Swank
Attention: Mr. Jim Rinker

Lab Number	IE83019	IE83020
Sample Description	003 COMPOSITE	004 COMPOSITE
ARSENIC	mg/kg 4.68 *	3.34 *
BARIUM	mg/kg < 193 *	107 *
CADMIUM	mg/kg 10.1 *	0.7 *
CHROMIUM - TOTAL	mg/kg 51.0 *	16.0 *
IRON	mg/kg 36579 *	17050 *
LEAD	mg/kg < 501 *	34.0 *
MERCURY (Cold Vapor)	mg/kg 0.56	0.34
SELENIUM	mg/kg .020 *	.048 *
SILVER	mg/kg < 1.0 *	< 1.0 *
EXTRACTABLE ORGANIC HALIDES (EOX)	mg/kg < 3.0	< 3.0
ORGANIC CARBON, TOTAL (TOC)	% 2.34	1.63

* Results are on dry weight basis.


Peter A. Conidaris
Laboratory Manager

OH000048

BROOKSIDE FARMS LABORATORY ASSN., INC.
Environmental & Industrial Division
New Knoxville, Ohio 45821
(419) 753-2440

** ANALYSIS REPORT **

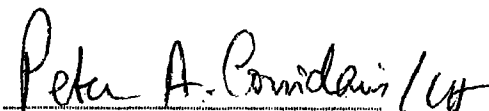
Ross Aluminum Foundries
707-815 N. Oak Avenue
P.O. Box 609
Sidney, OH 45365

File Number: 60243
Date rec'd: 07/19/88
Date rep'd: 08/05/88

EID Rep. Monte W. Swank
Attention: Mr. Jim Rinker

Lab Number	IE83021	IE83022
Sample Description	005 COMPOSITE	006 (0-6")
ARSENIC	mg/kg 2.53 *	0.63 *
BARIUM	mg/kg 1562 *	168 *
CADMIUM	mg/kg 30.3 *	1.70 *
CHROMIUM - TOTAL	mg/kg 36.0 *	20.0 *
CYANIDES - TOTAL	mg/kg 1.15	.675
IRON	mg/kg 16862 *	29669 *
LEAD	mg/kg 28050 *	97.0 *
MERCURY (Cold Vapor)	mg/kg 3.73	0.19
PHENOLS - TOTAL	mg/kg 0.47	0.30
SELENIUM	mg/kg .024 *	.022 *
SILVER	mg/kg 1.0 *	1.0 *
EXTRACTABLE ORGANIC HALIDES (EOX)	mg/kg < 3.0	< 3.0
ORGANIC CARBON, TOTAL (TOC)	% 5.51	0.93

* Results are on dry weight basis.


Peter A. Conidaris
Laboratory Manager

OH000049

BROOKSIDE FARMS LABORATORY ASSN. INC.
Environmental & Industrial Division
New Knoxville, Ohio 45671
(419) 753-2448

** ANALYSIS REPORT **


Ross Aluminum Foundries
707-215 N. Oak Avenue
P.O. Box 609
Sidney, OH 45365

File Number: 60240
Date recv'd: 07/19/88
Date repl'd: 08/05/88

EID Rep: Monte W. Swank
Attention: Mr. Jim Rinker

Lab Number	IF83023	IF83024
Sample Description	006 (17-20")	007 (27-30" BOTTOM 3")
ARSENIC	mg/kg 0.68 *	8.38 *
BARIUM	mg/kg 167 *	138 *
CADMIUM	mg/kg 0.9 *	1.20 *
CHROMIUM - TOTAL	mg/kg 17.0 *	12.0 *
CYANIDES - TOTAL	mg/kg .175	0.400
IRON	mg/kg 28778 *	22480 *
LEAD	mg/kg 32.0 *	175 *
MERCURY (Cold Vapor)	mg/kg .065	0.27
PHENOLS - TOTAL	mg/kg < 0.03	< 0.03
SELENIUM	mg/kg .021 *	0.021 *
SILVER	mg/kg < 1.0 *	< 1.0 *
EXTRACTABLE ORGANIC HALOGENS (EOX)	mg/kg < 3.0	< 3.0
ORGANIC CARBON, TOTAL (TOC)	% 1.74	0.58

* Results are on dry-weight basis.


Peter A. Conidaris
Laboratory Manager

OH000050

BROOKSIDE FARMS LABORATORY ASSN. (INC.)
Environmental & Industrial Division
New Knoxville, Ohio 45371
(419) 753-2443

ANALYSIS REPORT **

Ross Aluminum Foundries
707-815 N. Oak Avenue
P.O. Box 609
Sidney, OH 45365

File Number: 60242
Date rec'd: 07/19/88
Date rept'd: 08/05/88

EID Rep: Monte W. Swank
Attention: Mr. Jim Rinker

Lab Number: IE83025
Sample Description: 008 COMPOSITE

ARSENIC	mg/kg	0.80 *
BARIUM	mg/kg	88.0 *
CADMIUM	mg/kg	0.7 *
CHROMIUM - TOTAL	mg/kg	10.0 *
CYANIDES - TOTAL	mg/kg	0.425
IRON	mg/kg	17729 *
LEAD	mg/kg	74.0 *
MERCURY (Cold Vapor)	mg/kg	0.19
PHENOLS - TOTAL	mg/kg	0.35
SELENIUM	mg/kg	0.023 *
SILVER	mg/kg	< 1.0 *
EXTRACTABLE ORGANIC HALIDES (EOH)	mg/kg	< 3.0
ORGANIC CARBON, TOTAL (TOC)	%	3.42

* Results are on dry-weight basis.

Peter A. Conidaris
Peter A. Conidaris
Laboratory Manager

BROOKSIDE FARMS LABORATORY ACSH, INC.
Environmental & Industrial Division
New Knoxville, Ohio 45071
(419) 753-2468

** ANALYSIS REPORT **

Ross Aluminum Foundries
707-016 N. Oak Avenue
P.O. Box 600
Sidney, OH 45365

File Number: 60243
Date rec'd: 07/19/88
Date rept'd: 08/05/88

EID Rep: Monte W. Swank
Attention: Mr. Jim Rinker

Lab Number	IE83026	IE83027
Sample Description	009 COMPOSITE	010 COMPOSITE
ARSENIC	mg/kg 51.6 *	6.15 *
BARIUM	mg/kg 8.50 *	73.0 *
CADMIUM	mg/kg < 0.5 *	0.6 *
CHROMIUM - TOTAL	mg/kg 3930 *	10.0 *
IRON	mg/kg 133320 *	12021 *
LEAD	mg/kg 177 *	269 *
MERCURY (Cold Vapor)	mg/kg < 0.03	< 0.025
SELENIUM	mg/kg < 0.01 *	.029 *
SILVER	mg/kg 3.0 *	< 1.0 *

* Results are on dry-weight basis.

Peter A. Conidaris / LM
Peter A. Conidaris
Laboratory Manager

OH000052

BROOKSIDE FARMS LABORATORY ASSN. INC.
Environmental & Industrial Division
New Knoxville, Ohio 45871
(419) 753-2440

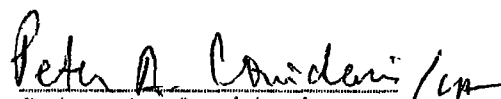
** ANALYSIS REPORT **

Poss Aluminum Foundries
707-815 N. Oak Avenue
P.O.Box 609
Sidney, OH 45365

File Number: 60743
Date rec'd: 07/19/88
Date rept'd: 08/05/88

EID Rep: Monte W. Swank
Attention: Mr. Jim Rinker

Lab Number	IF83028
Sample Description	011 (TOP 2", To Bottom of Tars)
EXTRACTABLE ORGANIC HALIDES (EOX)	mg/kg < 3.0
ORGANIC CARBON, TOTAL (TOC)	% 54.5


Peter A. Conidaris
Laboratory Manager

OH000053

BROOKSIDE FARMS LABORATORY ASSN. INC.
Environmental & Industrial Division
New Knoxville, Ohio 45871
(419) 753-2448

** ANALYSIS REPORT **

Ross Aluminum Foundries
707 815 N. Oak Avenue
P.O. Box 609
Sidney, OH 45365

File Number: 60242
Date recv'd: 07/19/88
Date rept'd: 08/05/88

EID Rep: Monte W. Swank
Attention: Mr. Jim Rinker

Lab Number	TE83029	TE83030
Sample Description	011 (BOTTOM 2")	012 (TOP 3")
ARSENIC	mg/kg 3.91 *	1.37 *
BARIUM	mg/kg 200 *	24.0 *
CADMIUM	mg/kg 3.50 *	< 0.5 *
CHROMIUM - TOTAL	mg/kg 3290 *	16.0 *
IRON	mg/kg 133300 *	11770 *
LEAD	mg/kg 900 *	55.0 *
MERCURY (Cold Vapor)	mg/kg < 0.025	0.27
SELENIUM	mg/kg .019 *	< 0.012 *
SILVER	mg/kg 6.0 *	< 1.0 *
EXTRACTABLE ORGANIC HALIDES (EOX)	mg/kg < 3.0	< 3.0
ORGANIC CARBON, TOTAL (TOC)	% 0.31	2.44

* Results are on dry-weight basis.

Peter A. Conidaris
Peter A. Conidaris
Laboratory Manager

OH000054

BPPOOKSIDE FARMS LABORATORY ASSN. INC.
Environmental & Industrial Division
New Knoxville, Ohio 45871
(419) 753-2448

** ANALYSIS REPORT **

Ross Aluminum Foundries
707-815 N. Oak Avenue
P.O. Box 609
Sidney, OH 45365

File Number: 60243
Date rec'd: 07/19/88
Date rept'd: 08/05/88

EID Rep: Monte W. Swank
Attention: Mr. Jim Rinker

Lab Number

IE83031

Sample Description

012 (BOTTOM 3")

ARSENIC	mg/kg	1.66 *
BARIUM	mg/kg	35.0 *
CADMIUM	mg/kg	0.9 *
CHROMIUM - TOTAL	mg/kg	22.0 *
IRON	mg/kg	13264 *
LEAD	mg/kg	257 *
MERCURY (Cold Vapor)	mg/kg	0.09
SELENIUM	mg/kg	0.037 *
SILVER	mg/kg	< 1.0 *
EXTRACTABLE ORGANIC HALIDES (EOX)	mg/kg	< 3.0
ORGANIC CARBON, TOTAL (TOC)	%	1.33

* Results are on dry-weight basis.

Peter A. Conidaris
Peter A. Conidaris
Laboratory Manager

OH000055

BROOKSIDE FARMS LABORATORY ASSN. INC.
Environmental & Industrial Division
New Knoxville, Ohio 45871
(419) 753-2448

** ANALYSIS REPORT **

Ross Aluminum Foundries
707-815 N. Oak Avenue
P.O. Box 609
Sidney, OH 45365

File Number: 60243
Date recv'd: 07/19/88
Date rept'd: 08/05/88

ETD Rep: Monte W. Swank
Attention: Mr. Jim Rinker

Lab Number	TE83032
------------	---------

Sample Description	013 COMPOSITE
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EXTRACTABLE ORGANIC HALIDES (EOX)	mg/kg	< 3.0
ORGANIC CARBON, TOTAL (TOC)	%	57.7

Peter A. Conidaris
Peter A. Conidaris
Laboratory Manager

OH000056

BROOKSIDE FARMS LABORATORY ASSN. INC.
Environmental & Industrial Division
New Knoxville, Ohio 45871
(419) 753-2448

** ANALYSIS REPORT **

Ross Aluminum Foundries
707-815 N. Oak Avenue
P.O. Box 609
Sidney, OH 45365

File Number: 60243
Date recv'd: 07/19/88
Date rpt'd: 08/05/88

FID Rep: Monte W. Swank
Attention: Mr. Jim Rinker

Lab Number	IF83033
Sample Description	014 (ID METAL TYPE)
CHROMIUM - TOTAL	% 12.5

Peter A. Conidaris / UC
Peter A. Conidaris
Laboratory Manager

OH000057

BROOKSIDE FARMS LABORATORY ASSN. INC.
Environmental & Industrial Division
New Knoxville, Ohio 45871
(419) 753-2448

** ANALYSIS REPORT **

Ross Aluminum Foundries
707-815 N. Oak Avenue
P.O. Box 600
Sidney, OH 45365

File Number: 60243
Date rec'd: 07/19/88
Date rep'd: 08/05/88

EID Rep: Monte W. Swank
Attention: Mr. Jim Rinker

Lab Number

IF83034

Sample Description

015 COMPOSITE

ARSENIC	mg/kg	1.11 *
BARIUM	mg/kg	21.0 *
CADMIUM	mg/kg	0.6 *
CHROMIUM - TOTAL	mg/kg	15.0 *
IRON	mg/kg	6690 *
LEAD	mg/kg	21.0 *
MERCURY (Cold Vapor)	mg/kg	< 0.025
SELENIUM	mg/kg	.012 *
SILVER	mg/kg	< 1.0 *
EXTRACTABLE ORGANIC HALIDES (EOX)	mg/kg	< 3.0
ORGANIC CARBON, TOTAL (TOC)	%	0.93

* Results are on dry-weight basis.


Peter A. Condaris
Laboratory Manager

OH000058

BROOKSIDE FARMS LABORATORY ASSN. INC.
Environmental & Industrial Division
New Knoxville, Ohio 45871
(419) 753-2448

** ANALYSIS REPORT **

Ross Aluminum Foundries
707-815 N. Oak Avenue
P.O.Box 609
Sidney, OH 45365

File Number: 60243
Date recv'd: 07/19/88
Date rept'd: 08/05/88

ETD Rep: Monte W. Swank
Attention: Mr. Jim Rinker

Lab Number	IE83035
Sample Description	016
ASBESTOS (Chrysotile)	% 25.0

Peter A. Conidaris
Peter A. Conidaris
Laboratory Manager

BROOKSIDE FARMS LABORATORY ASSN. INC.
Environmental & Industrial Division
New Knoxville, Ohio 45371
(419) 753 2118

** ANALYSIS REPORT **

Ross Aluminum Foundries
707-815 N. Oak Avenue
P.O. Box 609
Sidney, OH 45365

File Number: 60243
Date rec'd: 07/19/88
Date rept'd: 08/05/88

EID Rep: Monte W. Swank
Attention: Mr. Jim Rinker

Lab Number

TE83061

Sample Description

CORE SAND
SAMPLE

ARSENIC	mg/kg	.161 *
BARIUM	mg/kg	< 0.10 *
CADMIUM	mg/kg	0.5 *
CHROMIUM - TOTAL	mg/kg	28.0 *
CYANIDES - TOTAL	mg/kg	1.23
IRON	mg/kg	249 *
LEAD	mg/kg	14.0 *
MERCURY (Cold Vapor)	mg/kg	0.10
PHENOLS - TOTAL	mg/kg	2.84
SELENIUM	mg/kg	0.01 *
SILVER	mg/kg	2.0 *
EXTRACTABLE ORGANIC HALIDES (EOH)	mg/kg	< 3.0
ORGANIC CARBON, TOTAL (TOC)	%	2.49

* Results are on dry-weight basis.


Peter A. Conidakis
Laboratory Manager

OH000060

07/27/1988 14:29

EAGLE Picher IND.

513 721 2341 P.01



TELECOPIER TRANSMITTAL LETTER

Date of Transmittal: July 27, 1988

Please deliver these telecopied pages as soon as possible
to:

Mr. Jim Ricker
Eagle Aluminum Foundries
Sidney, Ohio

Telecopier: (513) 498-1883

From: Paul D. Harper
Legal Department
Eagle-Picher Industries, Inc.
(513) 721-7010 ext. 2418

Total number of pages
including this transmittal letter: 2

Transmitted on a Panafax UP-600SF
(513) 721-2341

IF ANY OF THESE PAGES ARE NOT CLEARLY RECEIVED,
PLEASE CALL (513) 721-7010 ext. 2515 IMMEDIATELY.

CONTAMINATION WORKSHEET

COMPANY EAGLE PITCHER IND.		JOB NUMBER	
PROJECT 1991 Sand Disposal Site		DRAWING NUMBER	
CHECKED BY NTS	APPROVED BY	DATE	

PROPOSED DRILLING SITES



P. COURT STREET

REARVIEW AVE.

EXISTING
DUMP
SITEPROPOSED
DUMP SITE
REARVIEWEXISTING
DUMP SITE

MONROE

1. BACKGROUND
2. BELOW CURRENT DUMP FACE
3. THROUGH RECENT FOUNDATION SAND
4. NEAR THE SLICK

FIELDING

5. DOWNGRADIENT OF CURRENT DUMP
6. THROUGH EXISTING NORTH DUMP
7. DOWNGRADIENT OF CURRENT DUMP

FULTON

ARBOISS

TOTAL P.02

OH000062

SYDNEY ON
PROPOSED DUMP SITE

7.18.88
SITE SURFACE SAMPLING

- 001 SOLID MATERIAL, IE DROSS, FROM DUMP PILE, TROWEL
- 002 SOILS, 15 FT. FROM 001, WEST
- 003 6" PLUG SOILS, NR. DRUM DUMP, 20+ YR OLD
- 004 6" PLUG, 10' WEST OF SOLID PILE, 20+ YR OLD
- 005 6" PLUG WEST OF RUBBER PILE, 2.145Y (FROM SOLID CAN)
20' WEST
- 006 0-20" SHELBY TUBE @ BOTTOM OF SOUTH DUMP
- 007 20"-30" SHELBY TUBE " " " "
- 008 6" PLUG, BOTTOM OF N. NORTH DUMP, IN RUNOFF CHANNEL
- 009 METAL SHAVING PILE, TROWEL, 20+ YR OLD
- 010 6" SOIL PLUG, 30 FT WEST OF 009
- 011 4" SHELBY TUBE THRU TARRY RUNOFF TO SOILS, UNDERLAIN BY
OXID. METAL PARTICLES
- 012 SHELBY TUBE, 0-20" APPROX, FROM SAND IN NORTH DUMP
- 013 TARRY SUBSTANCE, SURFACE, OSI.
- 014 METAL TRIMMINGS FROM METAL PILE
- 015 SOILS, 6" E TROWEL, SANDY, 150 FT WEST OF METAL PILES, 20+ YR OLD
- 016 TILE, FROM NORTH ACTIVE DUMP

TOTAL METALS SLAW (TMS)

AS, AL, AR, BR, FE, PB, Hg, AS, SE (BY ICP IF REQ)

CN

phenols

TOC

TOX

001 COMPOSITE, TMS, TOC, TOX

002 COMPOSITE, TMS, TOC, TOX

003 COMPOSITE, TMS, TOC, TOX

004 COMPOSITE, TMS, TOC, TOX

005 COMPOSITE, TMS, TOC, TOX, CN, phenols

006 0-6" SEGMENT : TMS, TOC, TOX, CN, phenols
17-20" " : " " " " "

007 27-30" SEGMENT (BOTTOM 3") : TMS, TOC, TOX, CN, phenols

008 COMPOSITE, TMS, TOC, TOX, CN, phenols

009 COMPOSITE, TMS,

010 COMPOSITE TMS

011 TOP 2" (TO BOTTOM OF TARS) : TOC, TOX
BOTTOM 2" : TMS, TOC, TOX

012 TOP 3" : TMS, TOC, TOX,
BOTTOM 3" : " " "

013 COMPOSITE, TOC, TOX

014 ID METAL TYPE

015 COMPOSITE, TMS, TOC, TOX

016 ASBESTOS

CORE SAND SAMPLE : TMS, phenols, CN, TOC, TOX

jim rinker

9-19-88

THIS DOCUMENT IS A ZONING
VARIANCE THAT ALLOWS ROSS TO
DEPOSIT SPENT FOUNDRY SAND
IN THE FLOOD PLAIN. THE
ZONING FOR THE PROPERTY
REMAINS "R-3."

SHOULD ROSS WANT TO BUILD
ON THIS PROPERTY AT A
LATER DATE THE NORMAL
PROCEDURE FOR PERMITS, ETC
SHOULD BE FOLLOWED, IE:

CONTACT BUILDING INSPECTOR,
ETC.

James F. Rinker

jim rinker

8-9-88

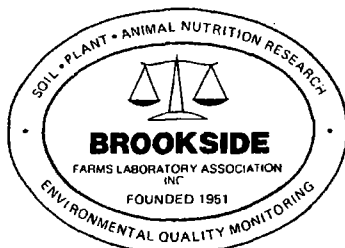
ENVIRONMENTAL EVALUATION

SOIL SAMPLE ANALYSIS	3269
HNU (ORGANIC VOLATILE)	750
DRILLING (DIG & FILL) 4 OR 5 SITES	750
ANALYSIS OF H ₂ O FROM DIG, ETC.	1000
OTHER WATER SAMPLES (BACKGROUND)	300
PERSONNEL COSTS	500

\$ 6569⁰⁰

TOM THIS IS THE
BEST. GUESS TO DATE.
I HAVE INCLUDED SOME
CUSHION.

J.



BROOKSIDE FARMS LABORATORY ASS'N., INC.
ENVIRONMENTAL & INDUSTRIAL DIVISION
NEW KNOXVILLE, OH 45871

(419) 753-2448

August 30, 1988

LAM VAN HO, Ph.D.
DIVISION DIRECTOR

Mr. Jim Rinker, Quality Coordinator
Ross Aluminum Foundries
707-815 N. Oak Avenue
P.O. Box 609
Sidney, OH 45365

Dear Jim,

Re: Field Inspection Report

In confirming our verbal report to you, this letter summarizes our field work on August 8 (Hydrocarbon Vapor Scan) and August 11 (soil profile inspection/sampling and subsurface water sampling) at the Brooklyn Landfill.

The analytical reports of your soil and water samples were already submitted to you on August 15. (As you requested, the invoice for all of these services are also enclosed).

I. Hydrocarbon Vapor Scan

The hydrocarbon vapor scan was performed throughout the site, using a HNU Portable Photoionization Analyzer (Model PI 101) with a 11.7 eV lamp. (Please see the attached Field Investigation Map)

The instrumentation uses a ultraviolet light detector to measure organic vapor and is specifically sensitive to the following chemicals:

Carbon disulfide
Heptane
Hexane
Pentane
1,2 Dichloroethane
Benzene
MIBK
Isobutylene
Toluene
Methyl Chloride
Methylene Chloride

1,1,1-trichloroethane
Carbon tetrachloride
Ethylene dichloride
Butane
THF
Acrylonitrile
MEK
Chloroform
1,1,2,2-tetrachloroethane
Acetone
Propane

OH000067

Page 2
August 30, 1988

The analyzer's probe was placed close to the soil surface to detect vapor coming directly from the soil. No hydrocarbon vapor was found.

II. Soil Profile Inspection/Sampling and Subsurface Water Sampling

Five trenches were dug at the landfill using a backhoe machine. Table 1 presents the trenching location, and other relevant information. Immediately after excavation, hydrocarbon vapor scan was also performed throughout the newly dug soil profiles. Again, no evidence of hydrocarbon vapor was found.

III. Conclusion

Up to the depth of excavation (about 15 feet below soil surface), there was no evidence of volatile organics at the landfill.

Jim, please accept my apology for late submittal of this report. As I presented to you, the Brookside Annual Conference and the emergency service need from one of our clients have forced me to delay the preparation of this report. However, I trust that my verbal communication with you has taken care of everything you need.

Thank you for your patience, and for giving us the opportunity to participate in this important project. If you have any questions pertaining to this report, please feel free to call.

Respectfully submitted,



Lam V. Ho, Ph.D.
Director, EID

LVH/js

cc/Monte Swank

OH000068

Table 1 - Soil Profile Investigation at the Brooklyn Landfill

Trench Location*	Depth (ft)	Sampling/Remark	Monitoring Parameters
(1)Background	15	1. Soil sample at 0-3" depth 2. Soil sample at 14' depth 3. No water was found	pH, Heavy Metals# EP Toxicity
(2)Below current dump site	9	1. Soil sample at 0-3" depth 2. Soil sample at 6' depth 3. Water was found at 6'6"depth 4. Subsurface water sample	pH, Heavy Metals pH, Heavy Metals Heavy Metals
(4)Near Tar Slick	11	1. Soil sample at 0-3" depth 2. Soil sample at 8'6" depth 3. Water was found at 9' depth 4. Subsurface water sample	pH, Heavy Metals pH, Heavy Metals Heavy Metals
(5)Downgradient of current dump	14	1. Soil sample at 0-3" depth 2. Soil sample at 10'6" depth 3. Water was found at 11' depth 4. Subsurface water sample	pH, Heavy Metals EP Toxicity Heavy Metals
(6)Downgradient of current dump	10	1. Soil sample at 0-3" depth 2. Soil sample at 8'3" depth 3. Water was found at 9' depth 4. Subsurface water sample	pH, Heavy Metals pH, Heavy Metals Heavy Metals

* Please refer to the attached map.

Heavy Metals tested: As, Ba, Cd, Cr, Pb, Se, Ag and Hg.

LAW OFFICES
ELSASS, SCHMITT, WALLACE & CO., L.P.A.

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E. J. GARMHAUSEN
(1913-1972)
TELECOPIER (513) 492-0876

August 22, 1988

John M. Garmhausen, Esq.
BLAKE, FULKNER, GARMHAUSEN
KEISTER & SHENK
126 N. Main Avenue
Sidney, OH 45365

RE: ROSS ALUMINUM FOUNDRIES and KIRK NATIONALEASE

Dear John:

I understand that Ross and Kirk Nationalease are in the midst of consummating a transaction concerning the purchase of a certain parcel of real estate located on Brooklyn Avenue owned by your client. You will shortly be asked to prepare a warranty deed for the transaction. Should you need a copy of the relevant description, please let me know.

As you may be aware, the site was used as a dump for some period of time prior to this transaction by other parties. We would like to have the following language placed in the warranty deed:

"Grantor expressly agrees to indemnify and save harmless Grantee from any and all losses, damages, claims or demands resulting from or to result in the future from the use or operation of the premises prior to the date of the execution of this warranty deed."

We would like to review a copy of the deed prior to the closing. I understand that this will be a cash transaction.

Should you need further information, let me know.

Very truly yours,

Richard H. Wallace

RHW:dlg

bcc: Jim Rinker✓

OH000071



Kirk National Lease

The Best In Equipment For Your Transportation Needs

March 31, 1986

Mr. Tom Kramer, President
Ross Aluminum Foundry
815 Oak Street
Sidney, OH 45365

Dear Mr. Kramer:

This will confirm our agreement to permit Ross Aluminum Foundry to dispose of fly ash and foundry sand devoid of toxic substances on the property owned by Kirk National Lease on Brooklyn Avenue, Sidney, Ohio. This authorization is given subject to the approval of the Board of Health as contained in their correspondence of February 26, 1986, a copy of which is enclosed.

This will further confirm our understanding that Ross Aluminum Foundry agrees to comply with the terms and conditions of the Board of Health authorization of February 26, 1986 and further that Ross Aluminum Foundry, so long as it continues to use the Brooklyn Avenue property for disposal purposes, shall obtain any and all permits and/or approvals required from the Board of Health, State of Ohio, Environmental Protection Agency and any other administrative agency.

It is our further understanding that Ross Aluminum Foundry will assume any and all liability which may arise as a result of the disposal of any substances from Ross Aluminum Foundry on the Brooklyn Avenue property. We further assume that in the event a governmental agency or body at some time in the future requires any treatment to or clean up of the disposed substances on the Brooklyn Avenue property, that Ross Aluminum Foundry will assume such responsibilities, expenses and costs with that disposed of by Ross Aluminum Foundry.

While Kirk National Lease is most willing to permit the disposal of these substances on our property, I trust that you understand that we believe any further responsibilities or obligations in connection with the disposal of these substances should be the responsibility of your Company.

I would appreciate your acknowledging your agreement to this understanding by signing the enclosed copy of this letter and return it to me.

In the event you have any questions, please feel free to contact me.

Sincerely,



Lloyd W. Schroer
President

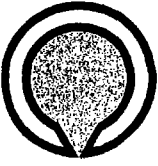
kw

Ross Aluminum Foundry agrees to the terms
and conditions of the foregoing letter.

ROSS ALUMINUM FOUNDRY

By: _____

Date: _____



Ross Aluminum Foundries P.O. Box 609 Sidney, Ohio 45365-0609 513/492-4134

Thursday
March 27th, 1986

Lloyd Schroer, President
KIRK NATIONALEASE
800 Vandemark Road
Sidney, OH 45365

Dear Mr. Schroer:

Thank you for your letter of March 19, we appreciate your prompt response.

While we agree in principle with your letter there is one area we would like to see more explicit, ie.: Starting with the last sentence in the third paragraph (highlighted). We would suggest that you change the text to say, in effect, that Ross Aluminum Foundries is responsible only for materials on the Brooklyn Avenue property that we have put there. We feel that this is the intent but we would like to see it spelled out.

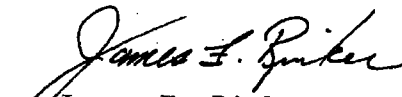
We are very confident that the foundry sand we are disposing of on your property at the south Brooklyn site is devoid of toxic substances. We base this on individual and composite core sand samples and water samples representative of areas adjacent to an accumulation of the same materials.

We at Ross appreciate this opportunity of working together with you.

Should you have additional comment, feel free to contact me.

Sincerely,

ROSS ALUMINUM FOUNDRIES


James F. Rinker
Quality Coordinator

JFR/baj

xc: T. E. Kramer, President, ROSS

G. L. Freisthler, VP-Operations, ROSS

File (2)

DIVISION OF
STATE POLICE

OH000074



Ross Aluminum Foundries P.O. Box 609 Sidney, Ohio 45365-0609 513/492-4134

Thursday
March 27th, 1986

Lloyd Schroer, President
KIRK NATIONALEASE
800 Vandemark Road
Sidney, OH 45365

Dear Mr. Schroer:

Thank you for your letter of March 19, we appreciate your prompt response.

While we agree in principle with your letter there is one area we would like to see more explicit, ie.: Starting with the last sentence in the third paragraph (highlighted). We would suggest that you change the text to say, in effect, that Ross Aluminum Foundries is responsible only for materials on the Brooklyn Avenue property that we have put there. We feel that this is the intent but we would like to see it spelled out.

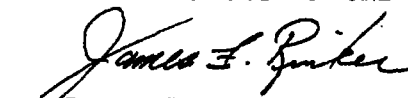
We are very confident that the foundry sand we are disposing of on your property at the south Brooklyn site is devoid of toxic substances. We base this on individual and composite core sand samples and water samples representative of areas adjacent to an accumulation of the same materials.

We at Ross appreciate this opportunity of working together with you.

Should you have additional comment, feel free to contact me.

Sincerely,

ROSS ALUMINUM FOUNDRIES


James F. Rinker
Quality Coordinator

JFR/baj

xc: T. E. Kramer, President, ROSS

G. L. Freisthler, VP-Operations, ROSS

File (2)

OH000075

N

The Best In Equipment For Your Transportation Needs

March 19, 1986

Mr. Tom Kramer, President
Ross Aluminum Foundry
815 Oak Street
Sidney, OH 45365

Dear Mr. Kramer:

This will confirm our agreement to permit Ross Aluminum Foundry to dispose of fly ash and foundry sand devoid of toxic substances on the property owned by Kirk National Lease on Brooklyn Avenue, Sidney, Ohio. This authorization is given subject to the approval of the Board of Health as contained in their correspondence of February 26, 1986, a copy of which is enclosed.

This will further confirm our understanding that Ross Aluminum Foundry agrees to comply with the terms and conditions of the Board of Health authorization of February 26, 1986 and further that Ross Aluminum Foundry, so long as it continues to use the Brooklyn Avenue property for disposal purposes, shall obtain any and all permits and/or approvals required from the Board of Health, State of Ohio, Environmental Protection Agency and any other administrative agency.

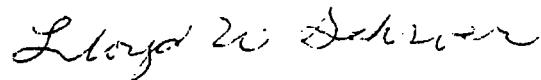
It is our further understanding that Ross Aluminum Foundry will assume any and all liability which may arise as a result of the disposal of any substances from Ross Aluminum Foundry on the Brooklyn Avenue property. We further assume that in the event a governmental agency or body at some time in the future requires any treatment to or clean up of the disposed substances on the Brooklyn Avenue property, that Ross Aluminum Foundry will assume such responsibilities, expenses and costs.

While Kirk National Lease is most willing to permit the disposal of these substances on our property, I trust that you understand that we believe any further responsibilities or obligations in connection with the disposal of these substances should be the responsibility of your Company.

I would appreciate your acknowledging your agreement to this understanding by signing the enclosed copy of this letter and return it to me.

In the event you have any questions, please feel free to contact me.

Sincerely,



Lloyd W. Schroer, President

LWS:jlg
Enclosures

Ross Aluminum Foundry agrees to the terms and conditions of the foregoing letter.

ROSS ALUMINUM FOUNDRY

By: _____

Date: _____



Ross Aluminum Foundries P.O. Box 609 Sidney, Ohio 45365-0609 513/492-4134

Monday
April 7th, 1986

Richard H. Wallace, Attorney
101 South Ohio Street
Sidney, OH 45365

Dear Mr. Wallace:

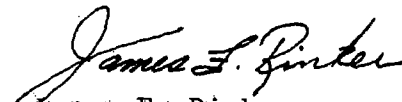
I have attached several pieces of correspondence regarding the disposal of foundry sand from Ross Aluminum Foundries.

We would very much appreciate your comments, especially on Kirk's letter of March 31, 1986. We don't intend to sign the agreement until we hear from you.

Thank you for your cooperation in this matter.

Sincerely,

ROSS ALUMINUM FOUNDRIES


James F. Rinker
Quality Coordinator

JFR/baj

Enclosures

xc: File (2)

OH000078

Board of Health

SHELBY COUNTY AND SIDNEY, OHIO

COURT HOUSE

PHONE: 498-7249

SIDNEY, OHIO 45365

January 22, 1986

Kirk National
Mr. Lloyd Schroer
Vice-President Operations
P. O. Box 784
Sidney, Ohio 45365

Re: Ash Disposal

Dear Mr. Schroer:

Our office has observed that your company is engaged in the filling of the pond adjacent to your truck parking lot with various materials including earth and fly ash. The use of inert materials such as clean concrete, brick or earth does not usually cause a problem to the water table, however, the depositing of cinders, fly ash and foundry sand cannot be used for the purpose of back-filling where it is placed in direct contact with ponded water, the water table or a flowing stream. This restriction stems from the fact that trace elements of chemicals are present in the material which can contaminate the water table or stream. Some types of foundry sand, for example, contain certain chemical elements which are classified as toxic, including phenolics, cyanides and fluorides.

It has been our past experience with EPA and those industries in Shelby County which must dispose of fly ash, cinders or foundry sand that the waste products can be used as fill where it is not in direct contact with ponded water or placed in or adjacent to streams or drainage swales. We must therefore ask that your company terminate its current practice of placing fly ash, cinders or foundry sand in the pond.

We wish to thank you for your cooperation and extend an invitation to you to contact our office if there are any questions.

OH000079

Kirk National
Mr. Lloyd Schroer
Page 2

Re: Ash Disposal

You may also contact the OEPA, Mr. Joe Moore at 1-449-6357
Dayton, Ohio, should you desire a more thorough technical
explanation.

Sincerely,

Richard H. Breece, M.D.

Richard H. Breece, M.D.
Health Commissioner

Donald L. Fair, R.S.

Donald L. Fair, R.S.
Administrative Sanitarian

DLF:jsb

cc: Mr. Joe Moore
7 East 4th Street
Dayton, Ohio 45402-2086

OH000080

Board of Health

SHELBY COUNTY AND SIDNEY, OHIO
COURT HOUSE
PHONE: 498-7249
SIDNEY, OHIO 45365

February 26, 1986

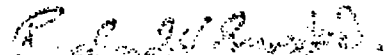
Kirk Nationalease
Mr. Lloyd Schroer
Vice President Operations
P.O. Box 784
Sidney, Ohio 45365

Re: Foundry Sand Disposal

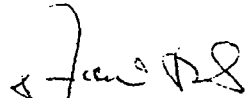
Dear Mr. Schroer:

The disposal of fly ash and foundry sand devoid of toxic substances can be use as fill material in areas not subjected to flooding, or in ponded water, streams or the water table. The area owned by Kirk Nationalease on Brooklyn Avenue has been used for that purpose and at this time appears to be satisfactory with this office.

Sincerely,



Richard H. Breece, M.D.
Health Commissioner



Donald L. Fair, R.S.
Administrative Sanitarian

DLF:lsn
cc: OEPA,
Mr. Joe Moore
✓ Ross Aluminum Foundries,
Mr. Jim Ricker

OH000081

N

The Best In Equipment For Your Transportation Needs

March 19, 1986

Mr. Tom Kramer, President
Ross Aluminum Foundry
815 Oak Street
Sidney, OH 45365

Dear Mr. Kramer:

This will confirm our agreement to permit Ross Aluminum Foundry to dispose of fly ash and foundry sand devoid of toxic substances on the property owned by Kirk National Lease on Brooklyn Avenue, Sidney, Ohio. This authorization is given subject to the approval of the Board of Health as contained in their correspondence of February 26, 1986, a copy of which is enclosed.

This will further confirm our understanding that Ross Aluminum Foundry agrees to comply with the terms and conditions of the Board of Health authorization of February 26, 1986 and further that Ross Aluminum Foundry, so long as it continues to use the Brooklyn Avenue property for disposal purposes, shall obtain any and all permits and/or approvals required from the Board of Health, State of Ohio, Environmental Protection Agency and any other administrative agency.

It is our further understanding that Ross Aluminum Foundry will assume any and all liability which may arise as a result of the disposal of any substances from Ross Aluminum Foundry on the Brooklyn Avenue property. We further assume that in the event a governmental agency or body at some time in the future requires any treatment to or clean up of the disposed substances on the Brooklyn Avenue property, that Ross Aluminum Foundry will assume such responsibilities, expenses and costs.

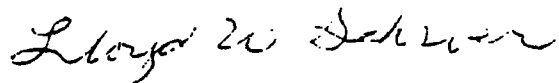
While Kirk National Lease is most willing to permit the disposal of these substances on our property, I trust that you understand that we believe any further responsibilities or obligations in connection with the disposal of these substances should be the responsibility of your Company.

OH000082

I would appreciate your acknowledging your agreement to this understanding by signing the enclosed copy of this letter and return it to me.

In the event you have any questions, please feel free to contact me.

Sincerely,



Lloyd W. Schroer, President

LWS:jl
Enclosures

Ross Aluminum Foundry agrees to the terms and conditions of the foregoing letter.

ROSS ALUMINUM FOUNDRY

By: _____

Date: _____



Ross Aluminum Foundries P.O. Box 609 Sidney, Ohio 45365-0609 513/492-4134

Thursday
March 27th, 1986

Lloyd Schroer, President
KIRK NATIONALEASE
800 Vandemark Road
Sidney, OH 45365

Dear Mr. Schroer:

Thank you for your letter of March 19, we appreciate your prompt response.

While we agree in principle with your letter there is one area we would like to see more explicit, ie.: Starting with the last sentence in the third paragraph (highlighted). We would suggest that you change the text to say, in effect, that Ross Aluminum Foundries is responsible only for materials on the Brooklyn Avenue property that we have put there. We feel that this is the intent but we would like to see it spelled out.

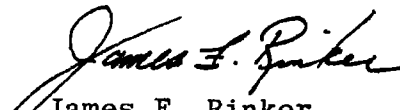
We are very confident that the foundry sand we are disposing of on your property at the south Brooklyn site is devoid of toxic substances. We base this on individual and composite core sand samples and water samples representative of areas adjacent to an accumulation of the same materials.

We at Ross appreciate this opportunity of working together with you.

Should you have additional comment, feel free to contact me.

Sincerely,

ROSS ALUMINUM FOUNDRIES


James F. Rinker
Quality Coordinator

JFR/baj

xc: T. E. Kramer, President, ROSS

G. L. Freisthler, VP-Operations, ROSS

File (2)

OH000084

N

The Best In Equipment For Your Transportation Needs

March 31, 1986

Mr. Tom Kramer, President
Ross Aluminum Foundry
815 Oak Street
Sidney, OH 45365

Dear Mr. Kramer:

This will confirm our agreement to permit Ross Aluminum Foundry to dispose of fly ash and foundry sand devoid of toxic substances on the property owned by Kirk National Lease on Brooklyn Avenue, Sidney, Ohio. This authorization is given subject to the approval of the Board of Health as contained in their correspondence of February 26, 1986, a copy of which is enclosed.

This will further confirm our understanding that Ross Aluminum Foundry agrees to comply with the terms and conditions of the Board of Health authorization of February 26, 1986 and further that Ross Aluminum Foundry, so long as it continues to use the Brooklyn Avenue property for disposal purposes, shall obtain any and all permits and/or approvals required from the Board of Health, State of Ohio, Environmental Protection Agency and any other administrative agency.

It is our further understanding that Ross Aluminum Foundry will assume any and all liability which may arise as a result of the disposal of any substances from Ross Aluminum Foundry on the Brooklyn Avenue property. We further assume that in the event a governmental agency or body at some time in the future requires any treatment to or clean up of the disposed substances on the Brooklyn Avenue property, that Ross Aluminum Foundry will assume such responsibilities, expenses and costs with that disposed of by Ross Aluminum Foundry.

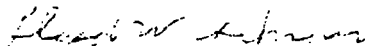
While Kirk National Lease is most willing to permit the disposal of these substances on our property, I trust that you understand that we believe any further responsibilities or obligations in connection with the disposal of these substances should be the responsibility of your Company.

OH000085

I would appreciate your acknowledging your agreement to this understanding by signing the enclosed copy of this letter and return it to me.

In the event you have any questions, please feel free to contact me.

Sincerely,



Lloyd W. Schroer
President

kw

Ross Aluminum Foundry agrees to the terms
and conditions of the foregoing letter.

ROSS ALUMINUM FOUNDRY

By: _____

Date: _____

AGREEMENT

This Agreement made and concluded this _____ day of May, 1986 by and between Ross Aluminum Foundries, a division of Eagle Picher Industries (hereinafter "Ross"), and Kirk National Lease Co., an Ohio corporation (hereinafter "Kirk").

W I T N E S S E T H :

WHEREAS, Kirk owns certain property located on Brooklyn Avenue in the City of Sidney, Shelby County, Ohio that is suitable for the disposal of certain industrial waste materials; and

WHEREAS, Ross conducts a foundry operation in Shelby County, Ohio and is desirous of obtaining a site to dispose of certain industrial substances (to wit: foundry sand) on the premises owned by Kirk; and

WHEREAS, Kirk is willing to permit Ross to dispose of certain materials on the site subject to certain terms and conditions.

NOW, THEREFORE, the parties agree as follows:

1. Kirk hereby agrees to permit Ross to dispose of foundry sand that does not contain toxic substances on its Brooklyn Avenue property. The consent given by Kirk is conditioned on and subject to the initial approval of the Board of Health of Shelby County, Ohio and the absence of any further action by the Board of Health to withdraw its approval.

2. Ross agrees to comply with the terms and conditions of the Board of Health authorization dated February 26, 1986, a copy of which is attached hereto and marked as Exhibit "A," and any further authorization. Ross further agrees to obtain any and all permits and/or approvals required

from the Board of Health, the State of Ohio, the U.S. or Ohio Environmental Protection Agencies or any other administrative agency having jurisdiction or authority over either the disposal site or the disposed materials.

3. Ross agrees to assume any and all liability and damages which may arise as a result of the disposal of any substance or material from Ross at the Brooklyn Avenue property. In the event a governmental agency requires any treatment to or clean up of the disposed substances on the Brooklyn Avenue property, Ross will agree to assume such responsibilities and pay such expenses and costs that are associated with that portion of the material deposited at the site by Ross.

4. This Agreement may be terminated by either party upon notifying the other party in writing no less than sixty (60) days prior to the date of termination. Termination of this Agreement shall not affect or in any manner discharge the continuing obligations of Ross under Sections 2 and 3 of this Agreement.

IN WITNESS WHEREOF, the parties have hereunto set their hands this

_____ day of May, 1986.

In the presence of:

ROSS ALUMINUM FOUNDRIES, A DIVISION OF
EAGLE PITCHER INDUSTRIES

By: J E Kramer

Its: President

KIRK NATIONALEASE CO.

By: Lloyd W. Schroer
Lloyd W. Schroer, President

James L. Picher
John Paulsen
John L. Picher
A/N1

Board of Health

SHELBY COUNTY AND SIDNEY, OHIO
COURT HOUSE
PHONE: 498-7249
SIDNEY, OHIO 45365

February 26, 1986

Kirk Nationalease
Mr. Lloyd Schroer
Vice President Operations
P.O. Box 784
Sidney, Ohio 45365

Re: Foundry Sand Disposal

Dear Mr. Schroer:

The disposal of fly ash and foundry sand devoid of toxic substances can be use as fill material in areas not subjected to flooding, or in ponded water, streams or the water table. The area owned by Kirk Nationalease on Brooklyn Avenue has been used for that purpose and at this time appears to be satisfactory with this office.

Sincerely,

Richard H. Breece, M.D.

Richard H. Breece, M.D.
Health Commissioner

Donald L. Fair, R.S.

Donald L. Fair, R.S.
Administrative Sanitarian

DLF:lsn
cc: OEPA,
Mr. Joe Moore
Ross Aluminum Foundries,
Mr. Jim Ricker

EXHIBIT "A"

OH000089

Eagle Picher
Urbana, OH



TETRA TECH EMI INC.

MEMORANDUM

To: Jon Gulch, U.S. EPA On-Scene Coordinator, Region 5, Grosse Ile, Michigan
From: Stephen Wolfe, Tetra Tech EMI START, Cleveland, Ohio
RE: TDD S05-0603-003 Eagle Picher Michigan, Ohio, and Illinois Properties----Supplemental Cost Information Estimate---Urbana, Ohio property.
CC: Jason Barbeau and Elise Feldman (U.S. DOJ), Catherine Garypie (U.S. EPA), site files
Date: April 7, 2006

Dear Mr. Gulch,

A site investigation report was submitted for the above referenced project. After discussions with the U.S. Department of Justice, it was determined that a more extensive estimate of project cost structure would be needed for each property. This memorandum discusses the Urbana, Ohio property only. Please note that all costs **are estimates only**. The following estimates and recommended actions were made based on all available site information and past experience with similar projects. A full Site Assessment conducted on the property may yield additional information that would increase or decrease these estimated costs.

At the time of the initial report (March 24, 2006), limited information was available, except observations from a site visit. Subsequent to the initial report, Eagle Picher Holdings, Inc., provided additional files concerning the property in question and that data was used to prepare this Memorandum. The final costs listed below are an updated estimate based on the site visit and all information provided by Eagle Picher Holdings, Inc. to date. Receipt of any additional information may affect the final estimate.

Minimum Recommended Actions

At this time, due to the lack of information concerning site conditions, the following actions should be taken, at a minimum, at the Urbana, Ohio property:

- (1) A full site assessment should be conducted to clearly define site conditions and any potential environmental issues. The site assessment will include sampling all monitoring wells and collecting soil samples in the area of the disposal pit.
- (2) Further research will need to be conducted to identify the source of the TCE contamination found in the monitoring well samples, until the State of Ohio and the U.S. EPA is satisfied that the disposal pit is not a source of contamination.
- (3) All environmental issues discovered during the site assessment will need to be addressed.

Justifications for Recommended Work

- (1) A Phase III report, written in 1990, suggests that TCE (and other VOCs) detected in the monitoring wells do not originate from the disposal pit. There is no justification for this statement other than the final round of monitoring well results. Further investigation is warranted.
- (2) There is no record of what was actually placed in the disposal pit. Additional sampling would indicate if any of the materials poses a threat to the environment.
- (3) A "worst case scenario" cost obtained in a document provided by Eagle Picher Holdings, Inc (page KS0000691) was \$200,000, more than twice the amount they are proposing to set aside for the property.

Site Assessment ^A			
		Analytical cost	
GW sampling	20 samples	\$750 each	\$15,000
Soil Sampling	20 samples	\$1,500 each	\$30,000
Labor and equipment			\$15,000
Total for Site Assessment			\$60,000
Removal HAZARDOUS Waste ^B			
Waste Disposal	1,851 yds ³	\$150/ yds ³	\$277,777
Labor and equipment			\$50,000
Backfill	1,851 yds ³	\$10/ yds ³	\$18,510
Analytical costs			\$10,000
Contingency	20%		\$71,257
Total for removal as Hazardous waste			\$427,544

- A Site Assessment will include: sampling all groundwater monitoring wells present (~20 samples including QA/QC) and running for "full scan" analysis (VOCs, SVOCs, Metals, TPH, PCBs, Pesticides, and Herbicides); using a GeoProbe to collect ~20 soil samples (including QA/QC) and running for "full scan" analysis (VOCs, SVOCs, Metals, TPH, PCBs, Pesticides, Herbicides, and TCLP). Analytical costs based on laboratory published costs per sample per analysis. Labor and equipment costs are estimated based on current U.S. EPA contractor rates.
- B Removal work. Total excavation is based on a 50 ft by 100 ft area (Page 6, PHASE I report by the H.C. Nutting Company, 1989). The depth of the excavation is assumed to be 10 feet. Analytical samples will determine if the excavated material needs to be excavated and disposed of as Hazardous waste. A 20% contingency is added for over-excavation or if additional contamination is found during confirmation sampling. Disposal rates are estimated based on past experience. Labor and equipment costs are estimated based on current U.S. EPA contractor rates.





TETRA TECH EM INC.

March 24, 2006,

Mr. Jon Gulch
On-Scene Coordinator
Emergency Response Branch 1
U.S. Environmental Protection Agency
9311 Groh Road
Grosse Ile, Michigan 48138

**Subject: Site Inspection Report
Eagle Picher Ohio/Michigan/Illinois Properties
Adjacent to 720 Edgewood Ave., Urbana, Champaign County, Ohio
Technical Direction Document No. S05-0603-003
Tetra Tech Contract No. 68-W-00-129**

Dear Mr. Gulch:

The Tetra Tech EM Inc (Tetra Tech) Superfund Technical Assessment and Response Team (START) is submitting the enclosed site inspection report for the Eagle Picher facility located in Urbana, Ohio. If you have questions or comments regarding the report or require additional copies, Please contact me at (440) 234-0886 or Therese Gioia at (312) 201-7431.

Sincerely,

Stephen Wolfe
Tetra Tech START Project Manager

Enclosure

cc: Lorraine Kosik, U.S. EPA START Project Officer
Therese Gioia, Tetra Tech START Program Manager

**SITE INSPECTION REPORT
EAGLE PICHER OHIO/MICHIGAN/ILLINOIS PROPERTIES
ADJACENT TO 720 S EDGEWOOD AVENUE
URBANA, CHAMPAIGN COUNTY, OHIO**

Prepared for

U.S. ENVIRONMENTAL PROTECTION AGENCY
Region 5 Emergency Response Branch 1
9311 Groh Road
Grosse Ile, MI 48138

TDD No.:	SO5-0603-003
Date Prepared:	March 24, 2006
Contract No.:	68-W-00-129
Prepared by:	Tetra Tech EM Inc.
Tetra Tech START Project Manager:	Stephen Wolfe
Telephone No.:	(440) 234-0886
U.S. EPA On-Scene Coordinator:	Jon Gulch
Telephone No.:	(734) 692-7686



TDD NO.: SO5-0603-003 (Eagle Picher Ohio/Michigan/Illinois properties/Urbana, Ohio location)

1.0 INTRODUCTION

Tetra Tech EM Inc. (TTEMI) Superfund Technical Assessment and Response Team (START) prepared this site inspection report in accordance with the requirements of Technical Direction Document (TDD) Number SO5-0603-003 issued by the U.S. Environmental Protection Agency (U.S. EPA). The scope of this TDD was to conduct site inspections at nine properties located in Ohio, Michigan, and Illinois. Specifically, START was tasked to assist the OSC in determining if Custodial Trust Funds set aside by the property debtor (Eagle Picher Holdings, Inc.) would be sufficient based on the following: review of all site files available at the time of the inspection; review of any historical reports for each site; and visual assessment/documentation of current property conditions. In addition to the visual property assessment, an X-Ray fluorescent instrument (Innov-X-Systems) was available to test soils for metal contamination at the Ohio and Michigan properties only.

Access for the site inspections was arranged between Catherine Garypie (Office of Regional Council, U.S. EPA, Region 5), Elise Feldman and Jason Barbeau (U.S. Department of Justice, Environmental Enforcement Section), and Patrick Brooks (legal counsel for Eagle Picher Holdings, Inc.).

Jon Gulch, Region 5 U.S. EPA On-Scene Coordinator (OSC) and Stephen Wolfe with TTEMI START performed all site inspections for the properties located in Ohio and Michigan. Doug Rommeck (Manager-Health, Safety and Environment) was the Eagle Picher representative for the Ohio and Michigan sites. Ken Brown and Raquel Cramlet with TTEMI START performed the inspection at the Illinois property. Greg Stauder of Greg Stauder & Co. was the representative for Eagle Picher at the Galena, Illinois property. Due to the timing of the inspections, no U.S. EPA representative was available to attend the site inspection in Galena, Illinois.

This report specifically addresses the property located adjacent to 720 S Edgewood Avenue, Urbana, Champaign County, Ohio (parcel number K48-25-11-01-33-020-00). Attachments to the report include a topographic map of the site location (Attachment A), an aerial photograph of the site location (Attachment B), and select photographs collected during the site inspection (Attachment C).

2.0 INITIAL BACKGROUND INFORMATION

The following site summary was compiled by Laura Ripley (Environmental Scientist, U.S. EPA Region 5).

This property is a 1-acre parcel located adjacent to an industrial use property. Eagle Picher sold the adjacent manufacturing facility in 1988, but retained the 1-acre site which contained a former trench and fill area where vitrified porcelain enamel frit was historically disposed. The property is not considered suitable for building. Investigations in 1989-1990 did not identify any groundwater impacts from the trench and fill. A search was done on the CERCLIS database and U.S. EPA's Superfund program has not had any involvement with this site; however, since there is not a physical address for the property, this could not be confirmed. A multi system query was conducted in ENVIROFACTS and no Eagle Picher facility came up by name.

3.0 HISTORICAL FILE REVIEW

No historical files on this property were available for review prior to the site inspection. Ohio EPA Southwest District Office made available all of their files for Eagle Picher properties located in southwest Ohio; however, no information pertaining to this particular property was found.

Eagle Picher Holdings made available files pertaining to the Urbana, Ohio location on March 23, 2006. A Phase I, II and III investigation has been performed on the property. The Phase III investigation was completed in May, 1990. Several excerpts are presented below.

In an Environmental Site Assessment Report (1988) in the site history, the following information pertaining to the landfill area was obtained. "From the beginning of operations in 1966 until about 1975, the facility did dispose of



materials on-site which could potentially be considered hazardous under current regulations....The nature of the materials in the pit and the geology of the area combine to present a potential hazard of contamination to the groundwater supply."

In the same 1988 report, one of the conclusions based on the assessment was "Information on the contents of the general landfill near the water tower is inconclusive."

In a 1989 Phase I report, an interview with a plant employee provided the following information "ash from incineration processes, drums of usable product, recycled frit, unused raw material, and general trash were placed into the pit."

A Phase III report completed in 1990 is summarized in the cover letter "The data from three phases of investigation support the conclusion that the disposal site does not adversely impact groundwater quality."

4.0 SITE OBSERVATIONS

The Eagle Picher property surrounds a 1-acre fenced piece of property owned by the City of Urbana. A water tower is located on the city property as well as two groundwater monitoring wells. The total size of the Eagle Picher owned property is approximately 1 acre. There is approximately 10 ground water monitoring wells located to the north of the fenced area on Eagle Picher property. It is assumed that the groundwater monitoring wells are located around the former trench area; however, no information or reports were provided prior to the site assessment. Vegetation covers all of the Eagle Picher property except for a small (approximately 10 square foot circle) of exposed soil. A soil sample was collected from the bare area and analyzed with the XRF unit. XRF results did not indicate any metal contamination for the exposed soil area.

5.0 CONCLUSION

Eagle Picher Holdings, Inc., is proposing that a set aside of \$92,971 to be used over a period of 2 years would be sufficient for property remediation.

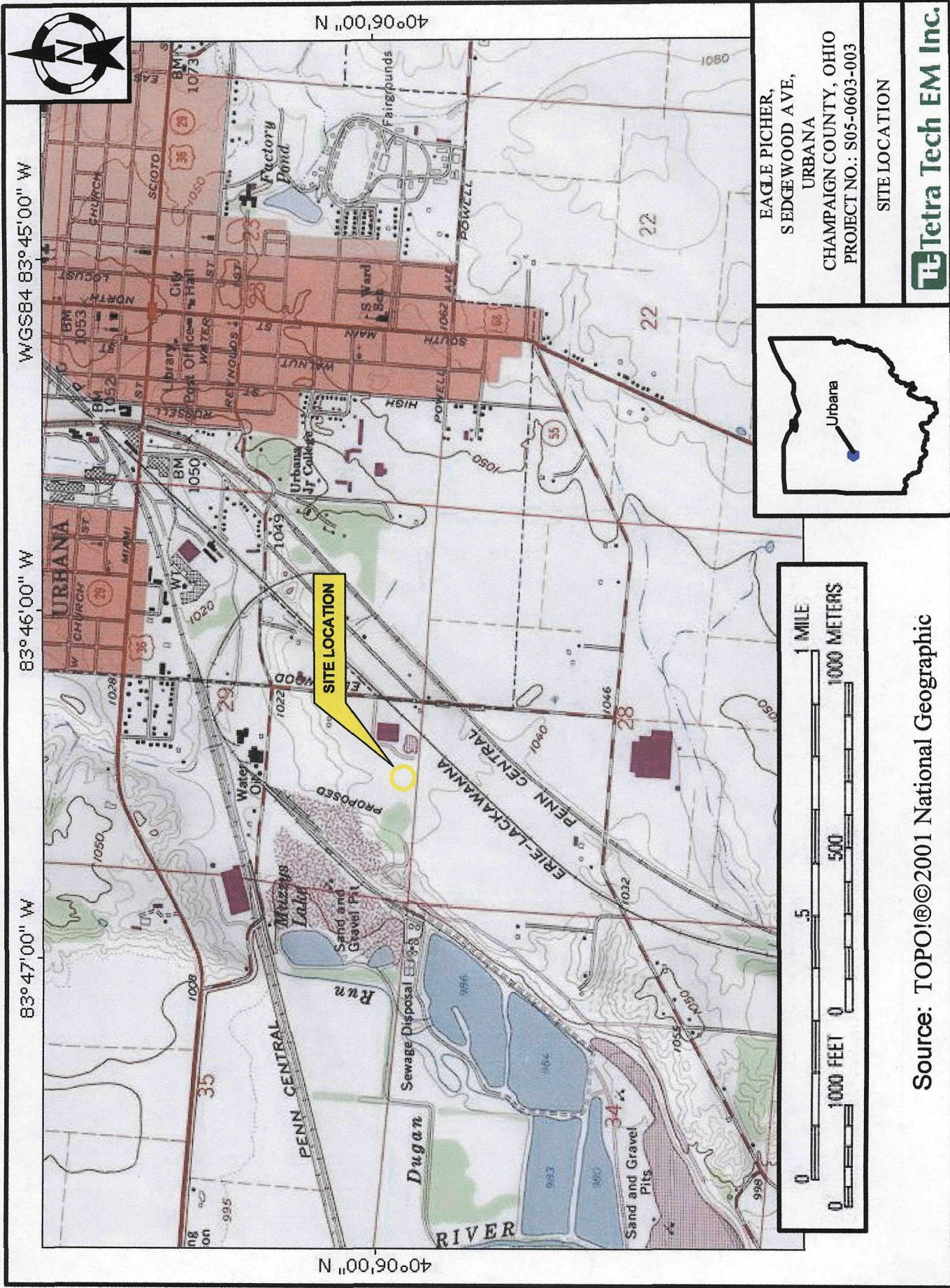
Based on all information available at the time of this report, it appears that the dollar amount proposed by Eagle Picher for the Urbana property would be sufficient; however, without more recent data for groundwater quality and soil quality U.S. EPA cannot rule out the possibility that there is contamination present on this property.



**ATTACHMENT A
TOPOGRAPHIC MAP**



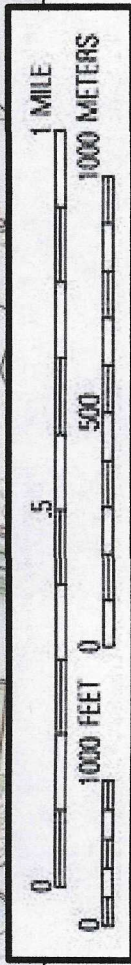
TDD NO.: SO5-0603-003 (Eagle Picher Ohio/Michigan/Illinois properties/Urbana, Ohio location)



EAGLE PICHER,
SEDGEWOOD AVE,
URBANA
CHAMPAIGN COUNTY, OHIO
PROJECT NO.: S05-0603-003

SITE LOCATION

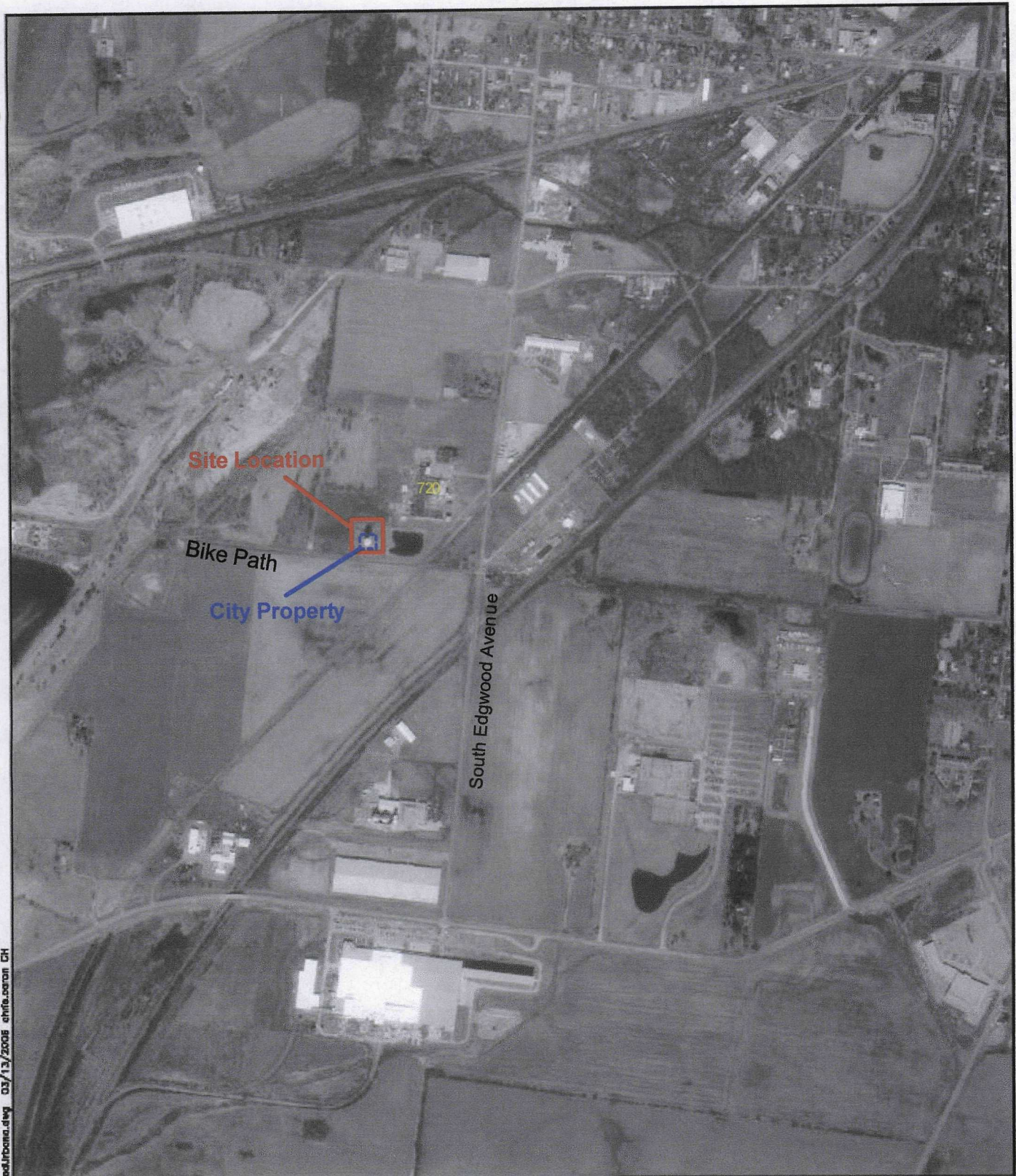
Tetra Tech EM Inc.



Source: TOPO!®©2001 National Geographic

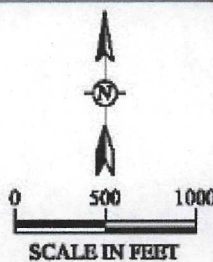
ATTACHMENT B
AERIAL MAP





NEAR 720 SOUTH EDGEWOOD AVENUE
URBANA, CHAMPAIGN COUNTY, OHIO

AERIAL MAP



SCALE IN FEET

TETRA TECH EM INC.

g:\g\2008\LE803003\CH720SEdgewood\rbmc.dwg 03/13/2008 chnfe.daron CH

SOURCE: MODIFIED FROM U.S. GEOLOGICAL SURVEY 7.5-MINUTE SERIES MAP, QUARTER
QUADRANGLE, RR, URBANA, OHIO

**ATTACHMENT C
PHOTOGRAPHIC LOG**



TDD NO.: SO5-0603-003 (Eagle Picher Ohio/Michigan/Illinois properties/Urbana, Ohio location)



Photograph No. 1 **Date:** March 20, 2006
TDD No.: S05-0603-003 **Orientation:** Northwest
Location: Near 720 S. Edgewood, Urbana, Ohio
Subject: Water tower. City Property is enclosed by fence



Photograph No. 2 **Date:** March 20, 2006
TDD No.: S05-0603-003 **Orientation:** West
Location: Near 720 S. Edgewood, Urbana, Ohio
Subject: Monitoring wells and vegetation on Eagle Picher property





Photograph No. 3 **Date:** March 20, 2006
TDD No.: S05-0603-003 **Orientation:** West
Location: Near 720 S. Edgewood, Urbana, Ohio
Subject: Bare patch of soil



Photograph No. 4 **Date:** March 20, 2006
TDD No.: S05-0603-003 **Orientation:** Southwest
Location: Near 720 S. Edgewood, Urbana, Ohio
Subject: Monitoring wells and vegetation on Eagle Picher property





Photograph No. 5 **Date:** March 20, 2006
TDD No.: S05-0603-003 **Orientation:** South
Location: Near 720 S. Edgewood, Urbana, Ohio
Subject: Eagle Picher property has vegetation and monitoring wells



Photograph No. 6 **Date:** March 20, 2006
TDD No.: S05-0603-003 **Orientation:** East
Location: Near 720 S. Edgewood, Urbana, Ohio
Subject: Monitoring wells and vegetation on Eagle Picher property





Photograph No. 7 **Date:** March 20, 2006
TDD No.: S05-0603-003 **Orientation:** South
Location: Near 720 S. Edgewood, Urbana, Ohio
Subject: West side of city property (inside fence) Eagle Picher property has vegetation and monitoring well



Photograph No. 8 **Date:** March 20, 2006
TDD No.: S05-0603-003 **Orientation:** Down
Location: Near 720 S. Edgewood, Urbana, Ohio
Subject: Close-up of bare soil





Photograph No. 9 **Date:** March 20, 2006
TDD No.: S05-0603-003 **Orientation:** West
Location: Near 720 S. Edgewood, Urbana, Ohio
Subject: View of the northern side of the city property (through fence). Monitoring wells are also located inside the fenced area.





TETRA TECH EMI INC.

MEMORANDUM

To: Jon Gulch, U.S. EPA On-Scene Coordinator, Region 5, Grosse Ile, Michigan
From: Stephen Wolfe, Tetra Tech EMI START, Cleveland, Ohio
RE: TDD S05-0603-003 Eagle Picher Michigan, Ohio, and Illinois Properties----Supplemental Cost Information Estimate—Industrial Drive, Hillsdale, Michigan property.
CC: Jason Barbeau and Elise Feldman (U.S. DOJ), Catherine Garypie (U.S. EPA), site files
Date: April 7, 2006

Dear Mr. Gulch,

A site investigation report was submitted for the above referenced project. After discussions with the U.S. Department of Justice, it was determined that a more extensive estimate of project cost structure would be needed for each property. This memorandum discusses the Industrial Drive-Hillsdale, Michigan properties only. Please note that all costs **are estimates only**. The following estimates and recommended actions were made based on all available site information and past experience with similar projects. A full Site Assessment conducted on the property may yield additional information that would increase or decrease these estimated costs.

At the time of the initial report (March 24, 2006), limited information was available, except observations from a site visit. Subsequent to the initial report, Eagle Picher Holdings, Inc., provided additional files concerning the property in question and that data was used to prepare this Memorandum. The final costs listed below are an updated estimate based on the site visit and all information provided by Eagle Picher Holdings, Inc. to date. Receipt of any additional information may affect the final estimate.

Minimum Recommended Actions

At this time, due to the lack of information concerning site conditions, the following actions should be taken, at a minimum, at the Industrial Drive, Hillsdale, Michigan properties:

- (1) A full site assessment including the installation of additional monitoring wells should be conducted to clearly define site conditions and any potential environmental issues.
- (2) Routine sampling of all monitoring wells as long as the purging system is in operation.
- (3) Decontamination of all buildings as recommended by the Eagle Picher contractor.
- (4) Final closure of the LUST incidents for 221 Industrial Drive.
- (5) Address the benzene concern raised by the MDEQ.
- (6) Set aside contingency money in case MDEQ is not satisfied with the work performed.
- (7) All environmental issues discovered during the site assessment will need to be addressed.

Justifications for Recommended Work

- (1) There are numerous documents from the Michigan Department of Environmental Quality suggesting that additional investigation needs to occur to fully define the contamination plume. In addition, a benzene issue is listed as an outstanding concern that, to date, has not been addressed by Eagle Picher.
- (2) In a letter from MDEQ to EP, it stated that long term groundwater monitoring would be required (provided by EP document number MI0002484).
- (3) In a letter from URS to EP (MI0002546, dated July 2003) provided by Eagle Picher Holdings, Inc., MDEQ is quoted as saying that the system will take longer than the prescribed six years to complete.
- (4) Continue with the routine sampling to ensure that contamination is not migrating off-site.

- (5) The current extraction system is operating under a fixed price contract that has been paid up front. The originating company has since changed and there is a concern if the company changes yet again, or if the property no longer remains in Eagle Picher's position that this contract can expire.

Site Assessment ^A			
Monitoring wells	10	\$5,000 each	\$50,000
Soil Samples	20 (full scan)	\$1,500/each	\$30,000
Water Samples	10 (full scan)	\$750/each	\$7,500 (initial)
Labor and misc Equipment			\$20,000
Total for Site Assessment			\$107,500
Routine Sampling ^B			
Routine sampling	20	\$750/each	\$30,000
Routine sampling 10 years	(1 round each year)		\$300,000
Building Decontamination ^C			
215 Industrial Drive			\$18,000
221 Industrial Drive			\$30,000
Contingency	20%		\$9,600
Total for building decontamination			\$57,600
Additional Investigations ^D			
Addressing the 3 LUST incidents			\$100,000
Addressing Benzene concern			\$50,000
Contingency			\$30,000
Total for additional Investigations			\$180,000
Contingency Money ^E			
Total Contingency Money			\$1,200,000

- A Site assessment would include additional soil samples to determine lateral extent of contamination, and installation of additional monitoring wells to determine full extent of contamination. Analytical costs are based on laboratory published costs per sample per analysis. Labor and equipment costs are estimated based on current U.S. EPA contractor rates.
- B Routine sampling as required by MDEQ to determine if the system was effective since any soil contamination was not addressed. Total length and frequency of sampling will be determined by MDEQ based upon the State of Michigan's Rules and Regulations. Analytical costs based are on laboratory published costs per sample per analysis. Labor and equipment costs are estimated based on current U.S. EPA contractor rates.
- C In documents provided by Eagle Picher Holdings Inc., (MI 0003245 and MI0003256 dated February 2006) a contractor assessed each building and determined how much it would cost to perform the outlined tasks. A contingency is added in case additional work is discovered.
- D Numerous papers to Eagle Picher have stated that Benzene is a concern since it is present in some of the monitoring wells. Even though the Benzene may have originated off-site MDEQ has stated that Eagle Picher must address this issue. To date, no documentation has been provided that this issue is resolved. Estimated costs are for investigations into suspected source areas for EP to recoup some of the clean-up costs associated with this. In addition, there are 3 leaking underground storage tanks (LUST) incidents which are considered open with MDEQ.



- E Contingency Money. MDEQ has filed paperwork on behalf of the State of Michigan with the United States Bankruptcy Court for the Eastern District of Michigan, Southern Division, stating that for MDEQ to address the environmental concerns posed at the facilities (to satisfy Part 201, Environmental Remediation of the Michigan Natural Resources and Environmental Protection Act (NREPA), 1994 P.A. 451 and other applicable state and federal environmental protection statutes) would require the expenditure of more than \$1,200,000 of State funds. This would include soil and groundwater contamination delineation (approximately \$200,000), operation, maintenance and monitoring of the existing groundwater treatment system (approximately \$500,000), and remediation of the source area (approximately \$500,000).





TETRA TECH EM INC.

March 24, 2006,

Mr. Jon Gulch
On-Scene Coordinator
Emergency Response Branch 1
U.S. Environmental Protection Agency
9311 Groh Road
Grosse Ile, Michigan 48138

**Subject: Site Inspection Report
Eagle Picher Ohio/Michigan/Illinois Properties
215 and 221 Industrial Drive, Hillsdale, Hillsdale County, Michigan
Technical Direction Document No. S05-0603-003
Tetra Tech Contract No. 68-W-00-129**

Dear Mr. Gulch:

The Tetra Tech EM Inc (Tetra Tech) Superfund Technical Assessment and Response Team (START) is submitting the enclosed site inspection report for the Eagle Picher facility located at 215 and 221 Industrial Drive, Hillsdale, Michigan. If you have questions or comments regarding the report or require additional copies, Please contact met at (440) 234-0886 or Therese Gioia at (312) 201-7431.

Sincerely,

Stephen Wolfe
Tetra Tech START Project Manager

Enclosure

cc: Lorraine Kosik, U.S. EPA START Project Officer
Therese Gioia, Tetra Tech START Program Manager

**SITE INSPECTION REPORT
EAGLE PICHER OHIO/MICHIGAN/ILLINOIS PROPERTIES
215 AND 221 INDUSTRIAL DRIVE
HILLSDALE, HILLSDALE COUNTY, MICHIGAN**

Prepared for

**U.S. ENVIRONMENTAL PROTECTION AGENCY
Region 5 Emergency Response Branch 1
9311 Groh Road
Grosse Ile, MI 48138**

TDD No.:	SO5-0603-003
Date Prepared:	March 24, 2006
Contract No.:	68-W-00-129
Prepared by:	Tetra Tech EM Inc.
Tetra Tech START Project Manager:	Stephen Wolfe
Telephone No.:	(440) 234-0886
U.S. EPA On-Scene Coordinator:	Jon Gulch
Telephone No.:	(734) 692-7686



TDD NO.: SO5-0603-003 (Eagle Picher Ohio/Michigan/Illinois properties/Industrial Drive, Hillsdale, MI locations)

1.0 INTRODUCTION

Tetra Tech EM Inc. (TTEMI) Superfund Technical Assessment and Response Team (START) prepared this site inspection report in accordance with the requirements of Technical Direction Document (TDD) Number SO 5-0603-003 issued by the U.S. Environmental Protection Agency (U.S. EPA). The scope of this TDD was to conduct site inspections at nine properties located in Ohio, Michigan, and Illinois. Specifically, START was tasked to assist the OSC in determining if Custodial Trust Funds set aside by the property debtor (Eagle Picher Holdings, Inc.) would be sufficient based on the following: review of all site files available at the time of the inspection; review of any historical reports for each site; and visual assessment/documentation of current property conditions. In addition to the visual property assessment, an X-Ray fluorescent instrument (Innov-X-Systems) was available to test soils for metal contamination.

Access for the site inspections was arranged between Catherine Garypie (Office of Regional Council, U.S. EPA, Region 5), Elise Feldman and Jason Barbeau (U.S. Department of Justice, Environmental Enforcement Section), and Patrick Brooks (legal counsel for Eagle Picher Holdings, Inc.).

Jon Gulch, Region 5 U.S. EPA On-Scene Coordinator (OSC) and Stephen Wolfe with TTEMI START performed all site inspections for the properties located in Ohio and Michigan. Doug Rommeck (Manager-Health, Safety and Environment) was the Eagle Picher representative for the Ohio and Michigan sites. Ken Brown and Raquel Cramlet with TTEMI START performed the inspection at the Illinois property. Greg Stauder of Greg Stauder & Co. was the representative for Eagle Picher at the Galena, Illinois property. Due to the timing of the inspections, no U.S. EPA representative was available to attend the site inspection in Galena, Illinois.

This report specifically addresses the properties located at 215 and 221 Industrial Drive, Hillsdale, Hillsdale County, Michigan. Attachments to the report include a topographic map of the site location (Attachment A), an aerial photographic of the site location (Attachment B), and select photographs collected during the site inspection (Attachment C).

2.0 INITIAL BACKGROUND INFORMATION

The following site summary was compiled by Laura Ripley (Environmental Scientist, U.S. EPA Region 5).

The property located at 215 Industrial Drive is a rubber plant and has been in operation since 1940. It is used for the manufacture of rubber for automotive parts and consists of approximately 1 acre. Soil and groundwater remediation systems have been installed and are currently being operated at the Rubber Plant, under the supervision of the Michigan Department of Environmental Quality (MDEQ), to address a historic release of trichloroethylene (TCE) from a former degreasing operation. In 1986, U.S. EPA completed a Preliminary Assessment on this facility (CERCLIS ID MID005050109) and followed in 1987 with a Site Inspection Report. U.S. EPA determined that there would be no further remedial action planned under the Superfund Program. A multi-system query was conducted in ENVIROFACTS and the facility has a RCRA Handler ID MID000809798 and a TRI Facility ID 49242HLLSD215IN.

The property located at 221 Industrial Drive (adjacent to 215 Industrial Drive) is a 6.8 acre parcel that is used for the manufacture of automotive components, but those operations are in the process of being restructured. The Hillsdale Segment (part of the Eagle Picher corporate structure) is addressing a tank closure under the supervision of state agencies in Michigan. Some soil removal has been conducted in the vicinity of the tank. The soil and groundwater remediation system at the Rubber Plant (215 Industrial Drive, Hillsdale, Michigan) is also addressing groundwater impacts that may have resulted from a TCE release from the former degreasing operation at the Rubber Plant as well as potential impacts from the tank closure at this property. Due to the proximity of this site to the Hillsdale Tool and Rubber Plant, a portion of this parcel (2.5 acres) may have been looked at with respect to the CERCLIS ID MID005050109. A multi-system query was conducted on ENVIROFACTS, Eagle Picher may have 2 additional properties in Hillsdale on Industrial Drive: Hillsdale Tool & Mfg. Company Inc.



Daisy Parts Plant 2 is located at 221 Industrial Drive (RCRA Handler ID MID000809871 and a TRI Facility ID 4924DSY221IN); EP HT DIV Technical Ctr is located at 263 Industrial Drive (RCRA Handler ID MID985569623 and a TRI Facility ID 4924TCHCN263IN).

3.0 HISTORICAL FILE REVIEW

Several historical documents were available for review for the property located at 215 Industrial Drive. A report dated December 23, 1985 was prepared by the Michigan Department of Natural Resources (MDNR). MDNR personnel originally discovered the TCE release. From 1977 through 1985, TCE was used in degreasing operations. Used TCE would drain from an indoor catch basin to an outdoor 55-gallon drum located adjacent to the building on a soil parking lot. The barrel was lidless and there was no secondary containment unit for the barrel. Periodically the barrel would be emptied and replaced. Soil samples collected in the immediate vicinity of the barrel revealed TCE at 2,700 parts per million (ppm) at the surface and 140 ppm at 4 feet below surface. Groundwater contamination has not been documented; however, TCE is detectable in soil samples 60 feet from the spill area. Soil-gas samples were collected approximately 100 feet away from the spill area and Volatile Organic Compounds (VOCs) were detected in the sample. One residential well located 1/8 mile from the site had no TCE contamination.

A Site Inspection Report, written by the Ecology & Environment (E&E)-U.S. EPA Field Investigation Team (FIT) on September 23, 1987 confirmed the findings in the MDNR report. Since the 1985 report and as part of the remediation plans, the soil parking lot in the immediate vicinity of the spill has been paved and groundwater monitoring wells were installed. E&E-FIT collected some groundwater samples from the monitoring wells and TCE was detected up to 99 parts per billion (ppb). At the time of the E&E-FIT site inspection (May 14, 1987), approximately 300 pounds of TCE had been recovered from the soil and under the plant.

A U.S. EPA Notification of Regulated Waste Activity dated February 16, 1994 was available for review. It indicated that the facility is a medium quantity generator of D001 (Ignitable), Non-listed hazardous wastes and F001 (spent halogenated solvents) listed hazardous wastes. An updated form was submitted on October 20, 1994 changing the status of the facility to a large quantity generator of the above hazardous wastes.

The only historical document available for review for the property located at 221 Industrial Drive is a U.S. EPA notification of Regulated Waste Activity form dated May 23, 1994. The form indicates that the property is a small quantity generator of D002 (Corrosive) Non-listed hazardous wastes.

On March 3, 2006, Eagle Picher Holdings, Inc. made available some documents pertaining to the subject properties. Most of the documents were related to the TCE spill referenced above and the on-going remedial action plans. A Phase I report (April 30, 2004) was provided for the 221 Industrial Drive facility is summarized as follows: (1) three leaking underground storage tanks (LUST) incidents occurred on the property and each incident remains open according to MDEQ; and (2) the TCE spill located at 215 Industrial Drive poses an environmental risk.

4.0 SITE OBSERVATIONS

On March 21, 2006, a walkthrough of the facilities was conducted. During the walkthrough, Mr. Rommeck indicated that the facility located at 215 Industrial Drive was going to stay open under Eagle Picher management; therefore, no inspection occurred on this property other than to note that a major release of TCE occurred in the past and they are still undergoing remedial actions. The plume line resulting from the release flows down gradient towards 221 Industrial Drive.

An investigation was performed on the interior of the 221 Industrial Drive facility. There are 5 above-ground storage tanks located inside the building. Mr. Rommeck stated that they are empty, but may contain sludge material. There were approximately 15 drums and two 250-gallon storage tanks for petroleum products located



inside the building. Another 250-gallon storage tank was also located inside the building with a "Flammable Liquid 3" label with "kerosene" written on the label. There were also several gas cans located inside a flammable materials cabinet.

Several trenches and sumps were located inside the building and petroleum product was visible inside the sumps and trenches. There was a 40-yard roll-off box full of Non-hazardous waste material inside the building.

During the walkthrough, Mr. Rommeck stated that MDEQ (Vicki Katko) had provided a list of environmental concerns that need to be addressed at 221 Industrial Drive. In addition, Mr. Rommeck stated that the TCE treatment system was operating under contract that was paid for in advance (original contractor was Dames & Moore, which has been purchased by URS). Under the contract, the consultant is responsible for operation of the TCE treatment system until the levels of TCE meets applicable criteria set forth by MDEQ.

5.0 CONCLUSION

Eagle Picher Holdings, Inc., is proposing that a set aside of \$427,146 (to be spent over a period of 20 years) would be sufficient for property remediation at both the 215 Industrial Drive and the 221 Industrial Drive facilities located in Hillsdale, Michigan.

Based on available information at the time of this report, the funds proposed will not adequately address the environmental conditions present on site. It is assumed that the money that Eagle Picher is proposing to set aside will be used for addressing the concerns outlined by MDEQ. U.S. EPA attempted to contact MDEQ, however efforts were unsuccessful prior to the completion of this report, therefore the list of MDEQ concerns could not be reviewed.

The major concern for these sites is the status of the contract between Eagle Picher and the consultant operating the TCE remediation system. If Eagle Picher sells the property in the future, that contract may no longer be binding for operation of the system and clean-up of the TCE.

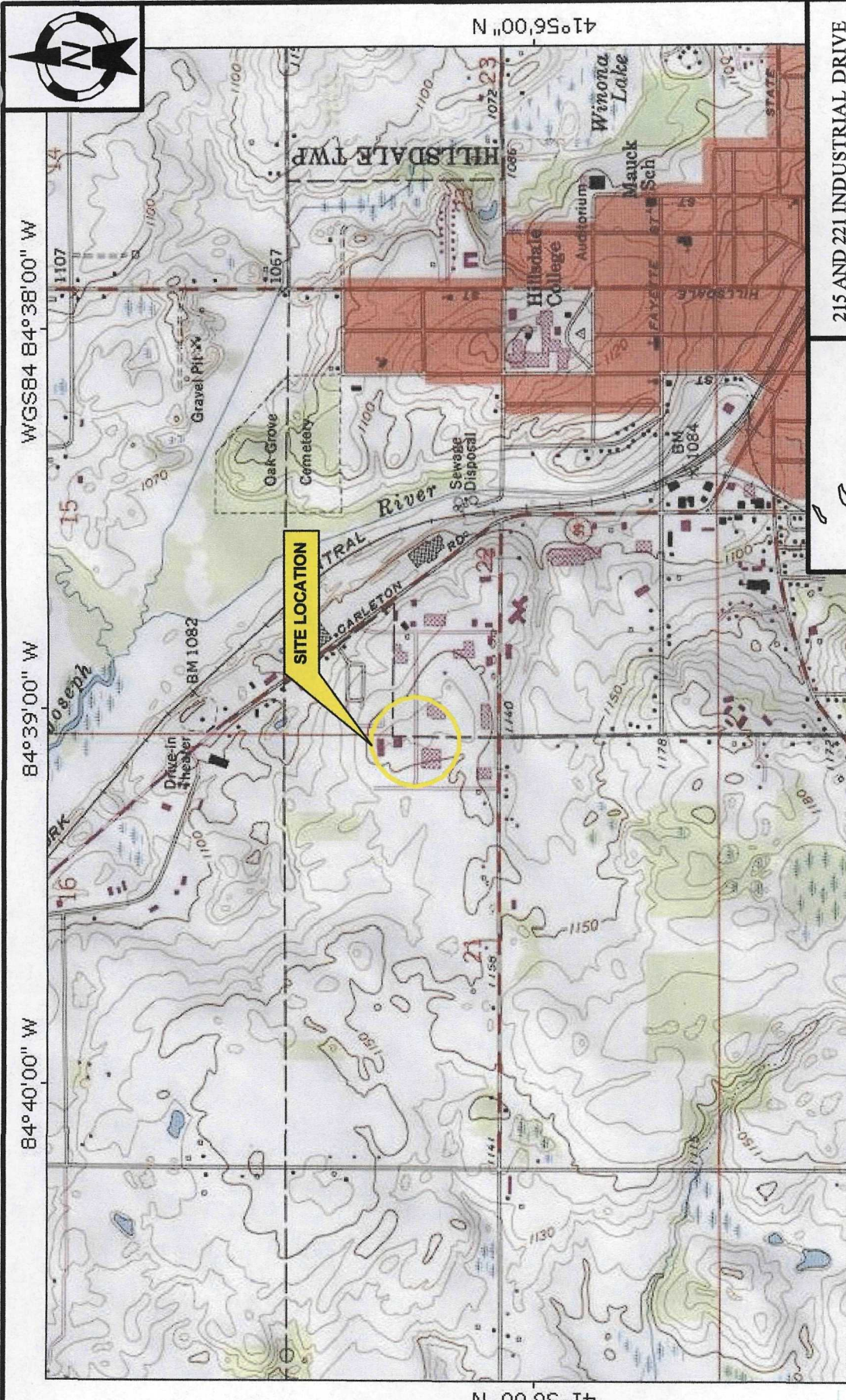
There are numerous references throughout the available documents (provided by both MDEQ and Eagle Picher Holdings) that mention that further investigations are needed to adequately define any extent-of-contamination. If the results of these additional assessments reveal more contamination, and/or the existing contract to remediate the TCE contamination is expired, the cost for total site clean-up can be estimated at approximately \$1,000,000.



**ATTACHMENT A
TOPOGRAPHIC MAP**

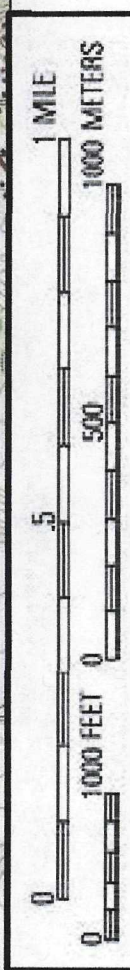
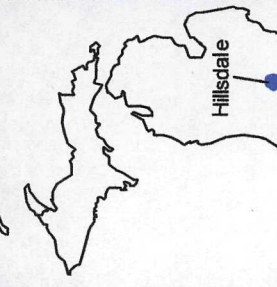


TDD NO.: SOS-0603-003 (Eagle Picher Ohio/Michigan/Illinois properties/Industrial Drive, Hillsdale, MI locations)



215 AND 221 INDUSTRIAL DRIVE
HILLSDALE
HILLSDALE COUNTY, MICHIGAN
PROJECT NO.: S05-0603-003

SITE LOCATION



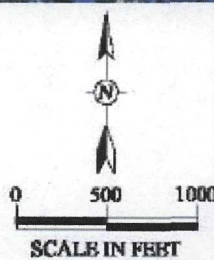
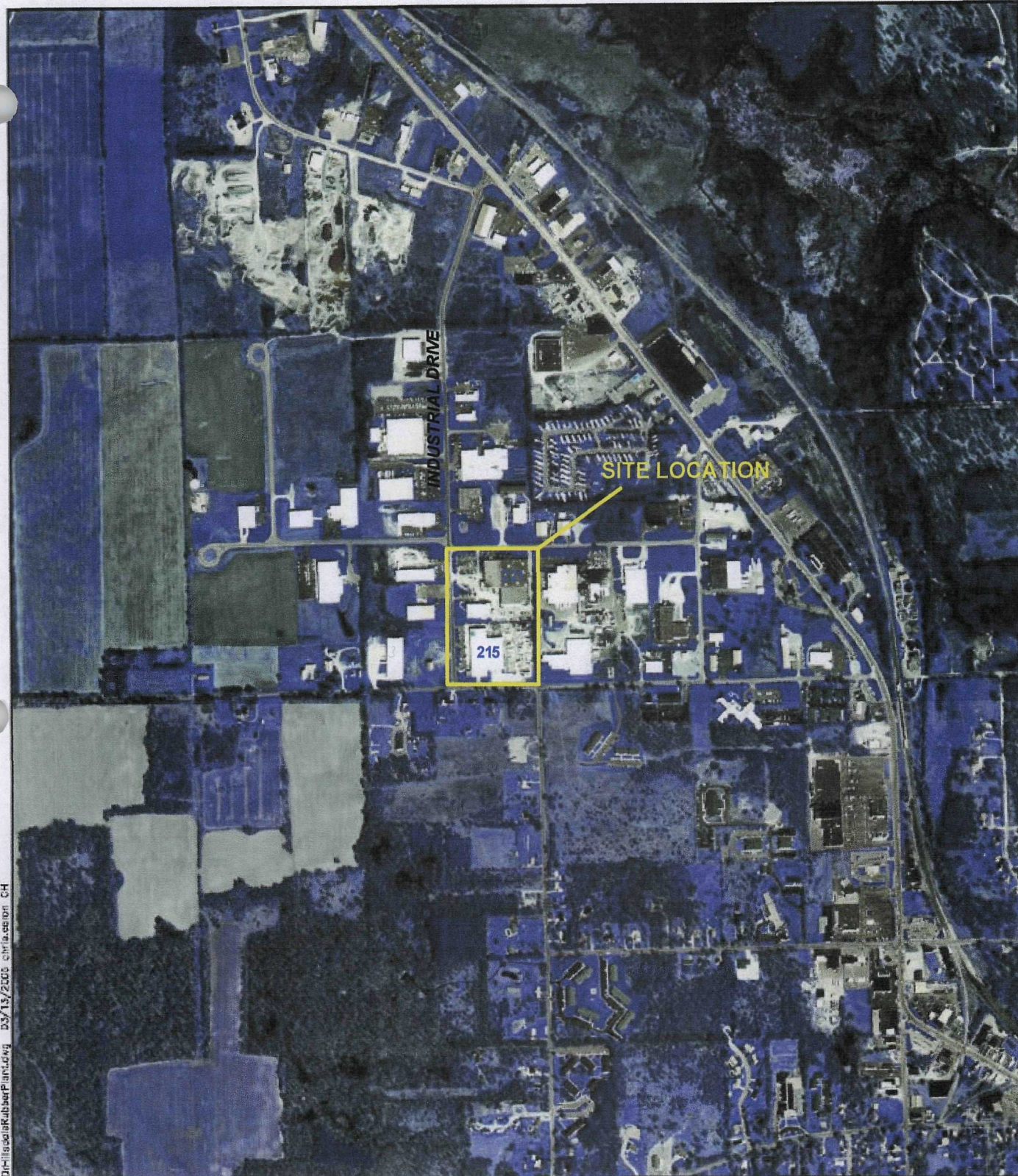
Source: TOPO!®©2001 National Geographic

ATTACHMENT B
AERIAL MAP



TDD NO.: SO5-0603-003 (Eagle Picher Ohio/Michigan/Illinois properties/Industrial Drive, Hillsdale, MI locations)

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215 AND 221 INDUSTRIAL DRIVE
HILLSDALE, HILLSDALE COUNTY,
MICHIGAN

AERIAL MAP



SOURCE: MODIFIED FROM U.S. GEOLOGICAL SURVEY 7.5-MINUTE SERIES MAP, QUARTER
QUADRANGLE, HILLSDALE, MICHIGAN

ATTACHMENT C
PHOTOGRAPHIC LOG



TDD NO.: SO5-0603-003 (Eagle Picher Ohio/Michigan/Illinois properties/Industrial Drive, Hillsdale, MI locations)



Photograph No. 1 **Date:** March 21, 2006
TDD No.: S05-0603-003 **Orientation:** Northwest
Location: 215 and 221 Industrial Drive, Hillsdale, Michigan
Subject: Parking area between 215 and 221 Industrial Drive

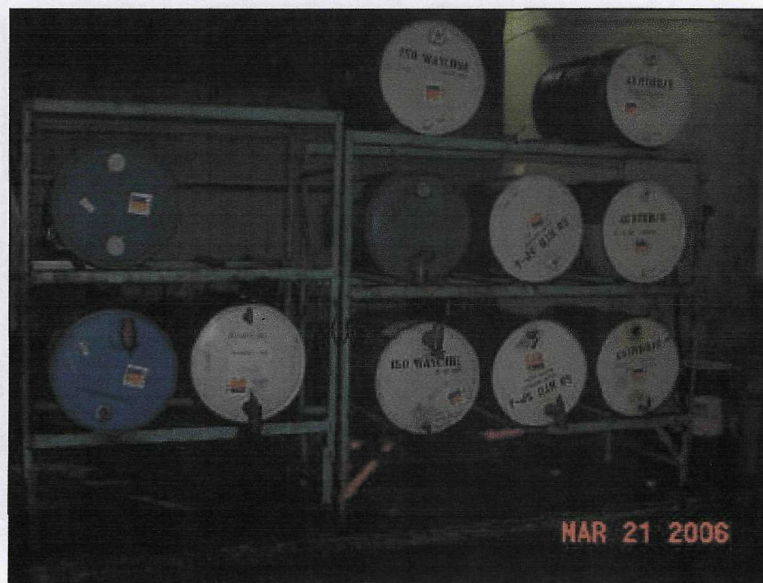


Photograph No. 2 **Date:** March 21, 2006
TDD No.: S05-0603-003 **Orientation:** Northeast
Location: 215 and 221 Industrial Drive, Hillsdale, Michigan
Subject: Rear parking lot of 221 Industrial Drive



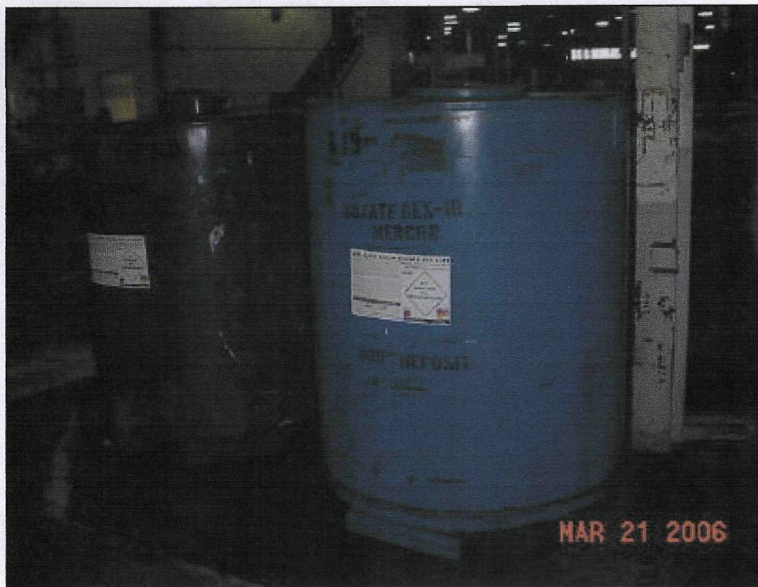


Photograph No. 3 **Date:** March 21, 2006
TDD No.: S05-0603-003 **Orientation:** Inside Building
Location: 215 and 221 Industrial Drive, Hillsdale, Michigan
Subject: Above-ground storage tanks



Photograph No. 4 **Date:** March 21, 2006
TDD No.: S05-0603-003 **Orientation:** Inside Building
Location: 215 and 221 Industrial Drive, Hillsdale, Michigan
Subject: Drums containing petroleum product



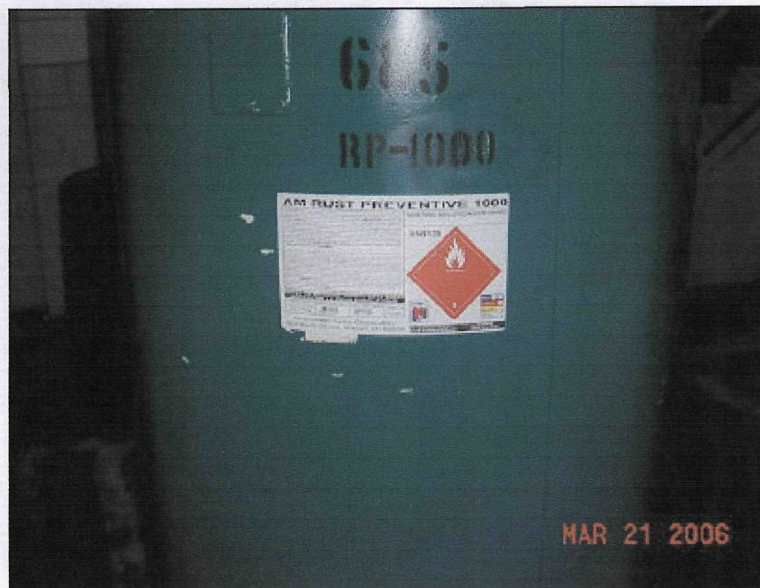


Photograph No. 5 **Date:** March 21, 2006
TDD No.: S05-0603-003 **Orientation:** Inside Building
Location: 215 and 221 Industrial Drive, Hillsdale, Michigan
Subject: Large, petroleum storage containers



Photograph No. 6 **Date:** March 21, 2006
TDD No.: S05-0603-003 **Orientation:** Inside Building, down
Location: 215 and 221 Industrial Drive, Hillsdale, Michigan
Subject: Visible oil in a sump



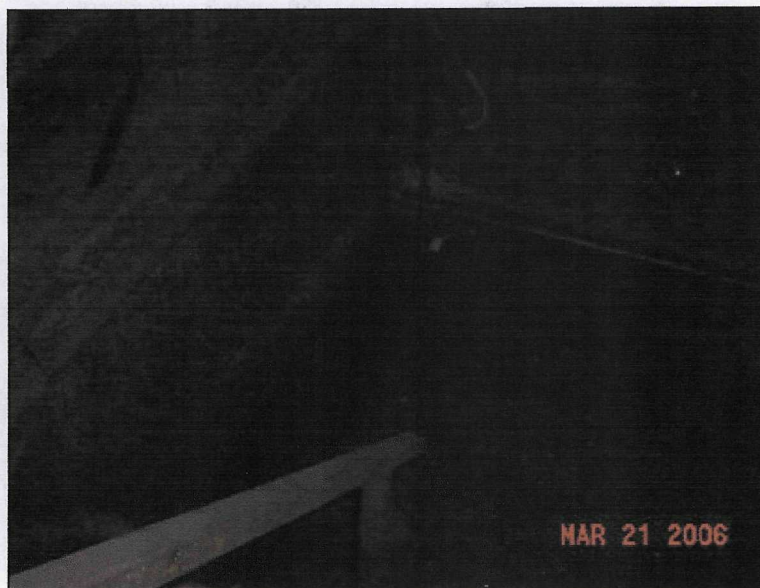


Photograph No. 7 **Date:** March 21, 2006
TDD No.: S05-0603-003 **Orientation:** Inside Building
Location: 215 and 221 Industrial Drive, Hillsdale, Michigan
Subject: Large liquid storage container with flammable sticker



Photograph No. 8 **Date:** March 21, 2006
TDD No.: S05-0603-003 **Orientation:** Inside Building
Location: 215 and 221 Industrial Drive, Hillsdale, Michigan
Subject: Full roll-off box of non-hazardous material





Photograph No. 9 **Date:** March 21, 2006
TDD No.: S05-0603-003 **Orientation:** Inside Building
Location: 215 and 221 Industrial Drive, Hillsdale, Michigan
Subject: Visible oil in sump



Photograph No. 10 **Date:** March 21, 2006
TDD No.: S05-0603-003 **Orientation:** Inside Building
Location: 215 and 221 Industrial Drive, Hillsdale, Michigan
Subject: Oxygen and acetylene cylinders



Eagle Picher
South Street
Hillsdale, MI



TETRA TECH EMI INC.

MEMORANDUM

To: Jon Gulch, U.S. EPA On-Scene Coordinator, Region 5, Grosse Ile, Michigan
From: Stephen Wolfe, Tetra Tech EMI START, Cleveland, Ohio
RE: TDD S05-0603-003 Eagle Picher Michigan, Ohio, and Illinois Properties----Supplemental Cost Information Estimate—135 East South Street, Hillsdale, Michigan property.
CC: Jason Barbeau and Elise Feldman (U.S. DOJ), Catherine Garypie (U.S. EPA), site files
Date: April 7, 2006

Dear Mr. Gulch,

A site investigation report was submitted for the above referenced project. After discussions with the U.S. Department of Justice, it was determined that a more extensive estimate of project cost structure would be needed for each property. This memorandum discusses the East South Street-Hillsdale, Michigan property only. Please note that all costs **are estimates only**. The following estimates and recommended actions were made based on all available site information and past experience with similar projects. A full Site Assessment conducted on the property may yield additional information that would increase or decrease these estimated costs.

At the time of the initial report (March 24, 2006), limited information was available, except observations from a site visit. Subsequent to the initial report, Eagle Picher Holdings, Inc., provided additional files concerning the property in question and that data was used to prepare this Memorandum. The final costs listed below are an updated estimate based on the site visit and all information provided by Eagle Picher Holdings, Inc. to date. Receipt of any additional information may affect the final estimate.

Minimum Recommended Actions

At this time, due to the lack of information concerning site conditions, the following actions should be taken, at a minimum, at the East South Street, Hillsdale, Michigan property:

- (1) A full site assessment should be conducted to clearly define site conditions and any potential environmental issues as recommended by ARCADIS in a document provided by Eagle Picher Holdings Inc., (MI0001455).
- (2) The recommended building decontamination should be performed.
- (3) Long term sampling of all monitoring wells (total 30 years).
- (4) Contaminated soil should be removed.
- (5) Contingency money should be set aside for future work in case the groundwater quality does not improve.
- (6) All environmental issues discovered during the site assessment will need to be addressed.

Justifications for Recommended Work

- (1) Further site assessment is necessary to fully define the extent of contamination as evidenced by the most recent Phase II investigation (2004).
- (2) In a letter dated Jan 12, 1995 provided by Eagle Picher Holdings, Inc. (MI0001800) in the remedial options section it states that the normal time for monitoring is 30 years. There is mention that EP would try to get a waiver for 10 years; however, there is no documentation provided saying this was accepted by MDNR (predecessor to MDEQ).
- (3) Soil samples collected during a field investigation (Eagle Picher Holdings, Inc. document number MI0001444) indicated that the soil samples exceeded MDEQ drinking water and GSI protection criteria.

Passive monitoring is not remediation. The source point (soil contamination) should be removed. In addition, groundwater samples collected during the same site investigation had contaminants above MDEQ criteria.

- (4) A "worst case scenario" cost obtained from a document provided by Eagle Picher Holdings, Inc. (page KS0000691) was \$500,000, more than three times the amount they are proposing to set aside for the property.

Site Assessment ^A			
Total for Site Assessment			\$50,000
Building Decontamination ^B			
Recommended			\$14,250
Contingency	20%		\$1,425
Total for Building Decontamination			\$15,675
Long Term Sampling ^C			
Total for Long Term Sampling			\$146,000
Removal Hazardous Waste ^D			
Waste Disposal	150 yds ³	\$150/ yds ³	\$22,500
Labor and Equipment			\$35,000
Backfill	150 yds ³	\$10/ yds ³	\$1,500
Analytical cost			\$3,000
Contingency	20%		\$12,400
Total for removal as Hazardous waste			\$74,400
Contingency Money ^E			
Total contingency money			\$250,000

- A Site assessment would include all recommendations presented by ARCADIS in 2004 including installing additional monitoring wells. Cost for additional site assessment was provided in the document (MI0001455).
- B As recommended by Eagle Picher contractor (document number MI0003245 provided by Eagle Picher Holdings, Inc.)
- C Cost estimate for longterm sampling obtained from a document provided by Eagle Picher Holdings, Inc. (MI0001800). Assumes that sampling started in 1995 (date of paper). In addition, the paper stated that MDNR requires 30 years but that EP would try for a 10 year waiver. No documentation has been provided that says MDNR accepted a 10 year plan.
- D A cost estimate (\$37,000) can be obtained from a document provided by Eagle Picher Holdings, Inc. (MI0001800) dated 1995. This estimate is based on today's dollars, and current U.S. EPA contractor rates. Size of excavation is estimated to be 20 ft x 20 ft x 10 ft. High labor costs are estimated as a main power line may have to be moved plus some work may have to be performed under the building. Performing soil removal may cut down on the long term monitoring costs.
- E Money should be set aside for groundwater remediation in case removal of the source point does not improve the groundwater quality to acceptable standards set by MDEQ. The amount proposed is an estimate on how much it would cost to install and operate a remediation system.





TETRA TECH EM INC.

March 24, 2006,

Mr. Jon Gulch
On-Scene Coordinator
Emergency Response Branch 1
U.S. Environmental Protection Agency
9311 Groh Road
Grosse Ile, Michigan 48138

Subject: Site Inspection Report
Eagle Picher Ohio/Michigan/Illinois Properties
135 East South Street, Hillsdale, Hillsdale County, Michigan
Technical Direction Document No. S05-0603-003
Tetra Tech Contract No. 68-W-00-129

Dear Mr. Gulch:

The Tetra Tech EM Inc (Tetra Tech) Superfund Technical Assessment and Response Team (START) is submitting the enclosed site inspection report for the Eagle Picher facility located at 135 East South Street, Hillsdale, Michigan. If you have questions or comments regarding the report or require additional copies, Please contact me at (440) 234-0886 or Therese Gioia at (312) 201-7431.

Sincerely,

Stephen Wolfe
Tetra Tech START Project Manager

Enclosure

cc: Lorraine Kosik, U.S. EPA START Project Officer
Therese Gioia, Tetra Tech START Program Manager

**SITE INSPECTION REPORT
EAGLE PICHER OHIO/MICHIGAN/ILLINOIS PROPERTIES
135 EAST SOUTH STREET
HILLSDALE, HILLSDALE COUNTY, MICHIGAN**

Prepared for

U.S. ENVIRONMENTAL PROTECTION AGENCY
Region 5 Emergency Response Branch 1
9311 Groh Road
Grosse Ile, MI 48138

TDD No.:	SO5-0603-003
Date Prepared:	March 24, 2006
Contract No.:	68-W-00-129
Prepared by:	Tetra Tech EM Inc.
Tetra Tech START Project Manager:	Stephen Wolfe
Telephone No.:	(440) 234-0886
U.S. EPA On-Scene Coordinator:	Jon Gulch
Telephone No.:	(734) 692-7686



TDD NO.: SO5-0603-003 (Eagle Picher Ohio/Michigan/Illinois properties/135 E South, Hillsdale, MI location)

1.0 INTRODUCTION

Tetra Tech EM Inc. (TTEMI) Superfund Technical Assessment and Response Team (START) prepared this site inspection report in accordance with the requirements of Technical Direction Document (TDD) Number SO5-0603-003 issued by the U.S. Environmental Protection Agency (U.S. EPA). The scope of this TDD was to conduct site inspections at nine properties located in Ohio, Michigan, and Illinois. Specifically, START was tasked to assist the OSC in determining if Custodial Trust Funds set aside by the property debtor (Eagle Picher Holdings, Inc.) would be sufficient based on the following: review of all site files available at the time of the inspection; review of any historical reports for each site; and visual assessment/documentation of current property conditions. In addition to the visual property assessment, an X-Ray fluorescent instrument (Innov-X-Systems) was available to test soils for metal contamination at the Ohio and Michigan sites only.

Access for the site inspections was arranged between Catherine Garypie (Office of Regional Council, U.S. EPA, Region 5), Elise Feldman and Jason Barbeau (U.S. Department of Justice, Environmental Enforcement Section), and Patrick Brooks (legal counsel for Eagle Picher Holdings, Inc.).

Jon Gulch, Region 5 U.S. EPA On-Scene Coordinator (OSC) and Stephen Wolfe with TTEMI START performed all site inspections for the properties located in Ohio and Michigan. Doug Rommeck (Manager-Health, Safety and Environment) was the Eagle Picher representative for the Ohio and Michigan sites. Ken Brown and Raquel Cramlet with TTEMI START performed the inspection at the Illinois property. Greg Stauder of Greg Stauder & Co. was the representative for Eagle Picher at the Galena, Illinois property. Due to the timing of the inspections, no U.S. EPA representative was available to attend the site inspection in Galena, Illinois.

This report specifically addresses the property located at 135 East South Street, Hillsdale, Hillsdale County, Michigan. Attachments to the report include a topographic map of the site location (Attachment A), an aerial photograph of the site location (Attachment B), and select photographs collected during the site inspection (Attachment C).

2.0 INITIAL BACKGROUND INFORMATION

The following site summary was compiled by Laura Ripley (Environmental Scientist, U.S. EPA Region 5).

The site is approximately 4.5 acres. Automotive component manufacturing was conducted at the site from approximately 1955 to 2000. The site is currently used for administration and warehousing operations, which are being wound down. An underground storage tank (UST) was removed at the site in 1996. A subsequent investigation in 2004 identified groundwater impacts from historic activities. The Hillsdale Segment (part of the Eagle Picher corporate structure) is currently monitoring this soil and groundwater contamination, which appears to be confined to the groundwater underlying the property. A search was performed on the CERCLIS database and it appears that U.S. EPA's Superfund Program has not had any involvement with this property. A multi-system query was performed on ENVIROFACTS and the site has a RCRA Handler ID MID005050109 and a TRI Facility ID 4924HLLSD135EA.

3.0 HISTORICAL FILE REVIEW

The only historical document available for review was a U.S. EPA Notification of Regulated Waste Activity (February 16, 1994). The document indicated that the facility is a small quantity generator of D001 (Ignitable) listed waste.



Eagle Picher Holdings, Inc. made available a Phase I and II Environmental Site Assessment Report that was prepared by Arcadis on April 29, 2004. The conclusion to the report is presented below:

The soil and groundwater analytical results from samples collected during the Phase II investigation indicate the subject property meets the requirements according to the MDEQ to be considered a 'facility' (as defined in Part 201, Section 324.20101(1)(o) of the NREPA, PA 451 of 1994, as amended) for soil and groundwater impacts. The extent of these impacts appears to be limited to the area surrounding the chip bay. However, it is unclear whether these impacts are the result of the failure of the sump in the chip bay area or are the residuals of the 1993 LUST incident at the subject property because Soil Boring SSG-3 was installed adjacent to the location of the former 2,000-gallon UST. The 1993 LUST incident received unrestricted residential closure from the MDEQ; however, current analytical results (typical petroleum constituents) show exceedances of the MDEQ residential cleanup criteria.

The current soil analytical results show detections of VOCs and PAHs that were either not previously detected (ethylbenzene, xylenes, fluorene, and naphthalene) or have increased (phenanthrene) since the 1993 LUST cleanup investigation. However, the depths that were sampled during the 1993 investigation (6 to 6.5 feet) are not the same as the depths that were sampled during the current investigation (range from 7.5 to 10 feet). In addition, other VOCs, PAHs, and metals were detected in soil and groundwater samples collected during the ARCADIS Phase II investigation that were not analyzed for in 1993, so it is impossible to determine concentrations trends of these constituents.

Elevated detection limits due to sample matrix interference occurred during the VOC and PAH analysis of soil samples SSG-3 and SSG-4. Therefore, numerous constituents that were not detected above the laboratory detection during the current investigation may actually have low-level detections, and accordingly, an accurate determination of concentrations trends of these constituents cannot be made.

In the report mentioned that the property contained asbestos containing material and lead paint in various parts of the building.

4.0 SITE OBSERVATIONS

This location is used mainly for administrative/office work. There is a large building on site and the majority of the facility is used to store equipment that is in the process of being decommissioned and sold. There are two above-ground storage tanks (ASTs) located inside the building. Mr. Rommeck stated that the ASTs were used to store a non-hazardous oil/water waste. The tanks were 2,200 and 2,500 gallon tanks and approximately 1,000 gallons of liquid were contained in the ASTs at the time of the inspection. Approximately 30 drums and 10 miscellaneous containers were located in the building by the ASTs. The drums and containers held various petroleum products (cutting oils, coolant oils, etc.). Oil spots were visible on the floor throughout the warehouse portion of the building. Two sumps were present that contained an oil/water mixture. Mercury lights are used in the warehouse.

The majority of the property not covered by the building is an asphalt/concrete/gravel parking lot. Very little vegetated property is present on the sites perimeter. There is evidence that some material was dumped on the property (piles of slag and sand) and the subject site is at a higher elevation than the surrounding properties. A branch of the St. Jones River flows along the eastern border of the property. Eight samples were analyzed with the XRF instrument and there was no evidence of metal contamination.

Mr. Rommeck stated that there was an underground storage tank (located outside the building) that was closed with a permit from the State of Michigan approximately 20 years ago. It is unclear whether the tank was actually removed or just filled in-place with an acceptable material. There are four groundwater monitoring wells present on site.



5.0 CONCLUSION

Eagle Picher Holdings, Inc. is proposing that a set aside of \$154,435 dollars to be spent over a period of 10 years would be sufficient for property remediation.

Based on all information available at the time of this report, it appears that the dollar amount proposed by Eagle Picher for the 135 East South Avenue, Hillsdale, Michigan property would be sufficient; provided that further site investigations do not uncover any additional contamination. At this time, there is no available information that would indicate that follow-up investigations were performed on the property; therefore, U.S. EPA would recommend that additional site investigations be performed. U.S. EPA cannot rule out the possibility that there is contamination present on this property.



**ATTACHMENT A
TOPOGRAPHIC MAP**



TDD NO.: SO5-0603-003 (Eagle Picher Ohio/Michigan/Illinois properties/135 E South, Hillsdale, MI location)



WGS84 84°36'

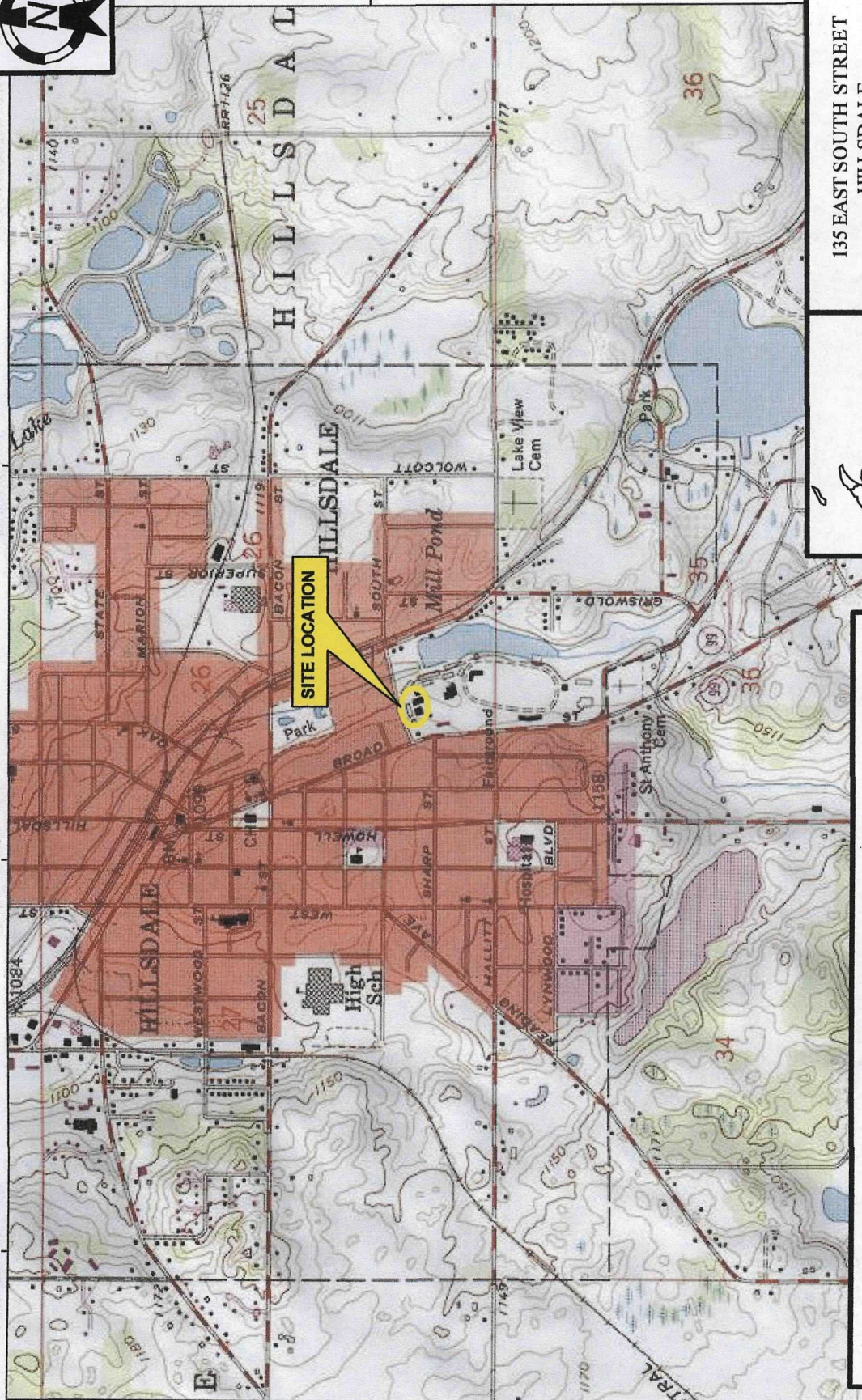
84°37'00" W

84°38'00" W

84°39'00" W

41°55'00" N

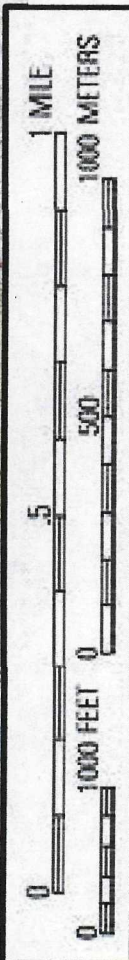
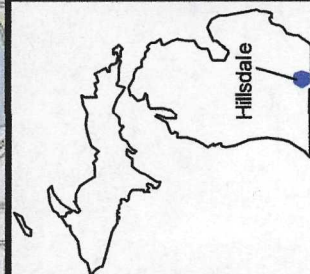
41°55'00" N



135 EAST SOUTH STREET
HILLSDALE
HILLSDALE COUNTY, MICHIGAN
PROJECT NO.: S05-0603-003

SITE LOCATION

Tetra Tech EM Inc.



Source: TOPO!®©2001 National Geographic

ATTACHMENT B
AERIAL MAP

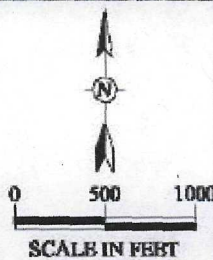


TDD NO.: SO5-0603-003 (Eagle Picher Ohio/Michigan/Illinois properties/135 E South, Hillsdale, MI location)



C:\Users\jld0601905\My Documents\Hillsdale.mxd 03/13/2008 07:12:00 PM

SOURCE: MODIFIED FROM U.S. GEOLOGICAL SURVEY 7.5-MINUTE SERIES MAP, QUARTER
QUADRANGLE NO. 1111, HILLSDALE, NORTH ARIAZO, MICHIGAN



SCALE IN FEET

135 EAST SOUTH STREET
HILLSDALE, HILLSDALE COUNTY,
MICHIGAN

AERIAL MAP

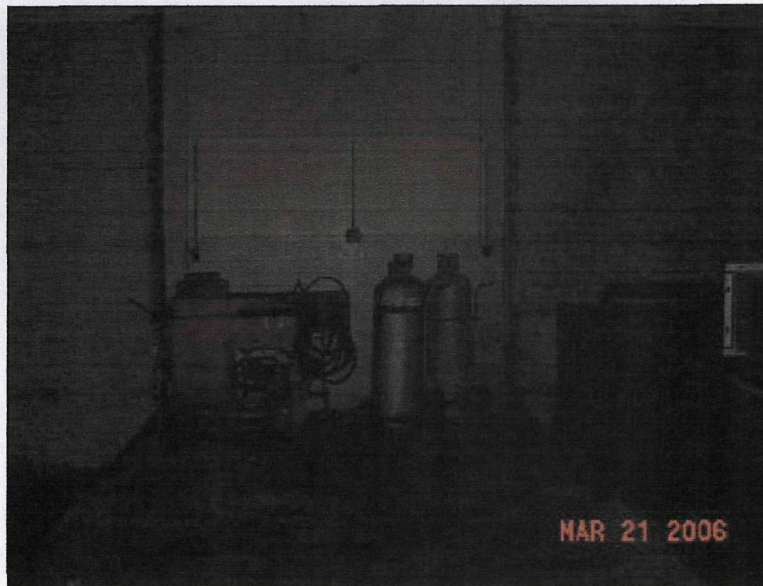


TETRA TECH EM INC.

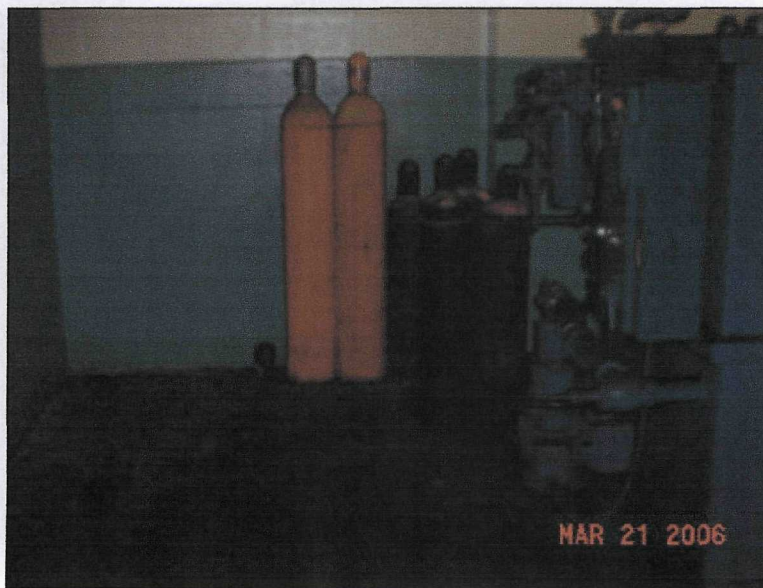
**ATTACHMENT C
PHOTOGRAPHIC LOG**



TDD NO.: SO5-0603-003 (Eagle Picher Ohio/Michigan/Illinois properties/135 E South, Hillsdale, MI location)



Photograph No. 1 **Date:** March 21, 2006
TDD No.: S05-0603-003 **Orientation:** Inside Building
Location: 135 East South Street, Hillsdale Michigan
Subject: Propane cylinders for forklifts

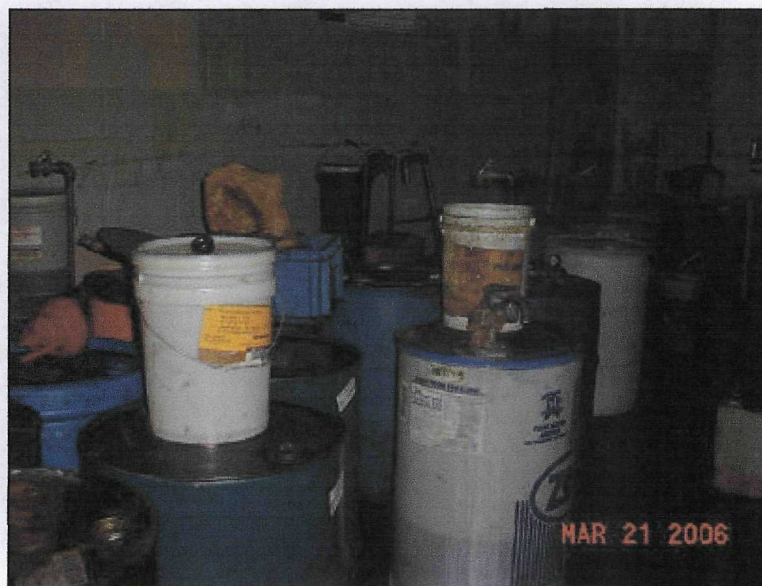


Photograph No. 2 **Date:** March 21, 2006
TDD No.: S05-0603-003 **Orientation:** Inside Building
Location: 135 East South Street, Hillsdale Michigan
Subject: Acetylene/Oxygen cylinders





Photograph No. 3 **Date:** March 21, 2006
TDD No.: S05-0603-003 **Orientation:** Inside Building
Location: 135 East South Street, Hillsdale Michigan
Subject: Non-hazardous oil/water storage tanks



Photograph No. 4 **Date:** March 21, 2006
TDD No.: S05-0603-003 **Orientation:** Inside Building
Location: 135 East South Street, Hillsdale Michigan
Subject: Drums of petroleum product





Photograph No. 5 **Date:** March 21, 2006
TDD No.: S05-0603-003 **Orientation:** Inside Building
Location: 135 East South Street, Hillsdale Michigan
Subject: Miscellaneous containers of petroleum product



Photograph No. 6 **Date:** March 21, 2006
TDD No.: S05-0603-003 **Orientation:** Northwest
Location: 135 East South Street, Hillsdale Michigan
Subject: Rear parking lot





Photograph No. 7 **Date:** March 21, 2006
TDD No.: S05-0603-003 **Orientation:** West
Location: 135 East South Street, Hillsdale Michigan
Subject: OSC Gulch testing the soil with an XRF



Photograph No. 8 **Date:** March 21, 2006
TDD No.: S05-0603-003 **Orientation:** West
Location: 135 East South Street, Hillsdale Michigan
Subject: Gate that was opened in the rear of the property. The gate could not be closed.





Photograph No. 9 **Date:** March 21, 2006
TDD No.: S05-0603-003 **Orientation:**
Location: 135 East South Street, Hillsdale Michigan
Subject: Branch of the St. Joseph River which borders the property to the east.



Photograph No. 10 **Date:** March 21, 2006
TDD No.: S05-0603-003 **Orientation:** Down
Location: 135 East South Street, Hillsdale Michigan
Subject: Pile of black sand at the northern edge of the property.





Photograph No.	11	Date:	March 21, 2006
TDD No.:	S05-0603-003	Orientation:	East
Location:	135 East South Street, Hillsdale Michigan		
Subject:	Slag that was dumped on the riverbank		





TETRA TECH EMI INC.

MEMORANDUM

To: Jon Gulch, U.S. EPA On-Scene Coordinator, Region 5, Grosse Ile, Michigan
From: Stephen Wolfe, Tetra Tech EMI START, Cleveland, Ohio
RE: TDD S05-0603-003 Eagle Picher Michigan, Ohio, and Illinois Properties----Supplemental Cost Information Estimate---Inkster, Michigan property.
CC: Jason Barbeau and Elise Feldman (U.S. DOJ), Catherine Garypie (U.S. EPA), site files
Date: April 7, 2006

Dear Mr. Gulch,

A site investigation report was submitted for the above referenced project. After discussions with the U.S. Department of Justice, it was determined that a more extensive estimate of project cost structure would be needed for each property. This memorandum discusses the Inkster, Michigan property only. Please note that all costs **are estimates only**. The following estimates and recommended actions were made based on all available site information and past experience with similar projects. A full Site Assessment conducted on the property may yield additional information that would increase or decrease these estimated costs.

At the time of the initial report (March 24, 2006), limited information was available, except observations from a site visit. Subsequent to the initial report, Eagle Picher Holdings, Inc., provided additional files concerning the property in question and that data was used to prepare this Memorandum. The final costs listed below are an updated estimate based on the site visit and all information provided by Eagle Picher Holdings, Inc. to date. Receipt of any additional information may affect the final estimate.

Minimum Recommended Actions

At this time, due to the lack of information concerning site conditions, the following actions should be taken, at a minimum, at the Inkster, Michigan property:

- (1) A full site assessment should be conducted to clearly define site conditions and any potential environmental issues. The site assessment will include off-site monitoring wells, as well as additional indoor subsurface sampling.
- (2) Indoor air samples (to include sub-slab) should be collected.
- (3) Building decontamination as suggested by their contractor, should be performed (document MI0003262 provided by Eagle Picher Holdings, Inc.) A contingency (20 percent) should be added to their estimated costs as there are two tasks that are as yet undefined.
- (4) Continue with ongoing sampling to include new monitoring wells installed.
- (5) A contingency fund should be set aside in case the planned remediation efforts are unsuccessful.
- (6) A contingency fund should be set aside to address any additional contamination present underneath the building and any off-site contamination found during the site assessment.
- (7) All environmental issues discovered during the site assessment will need to be addressed.

Justifications for Recommended Work/Contingencies

- (1) There are numerous documents from the Michigan Department of Environmental Quality referencing that further investigation is necessary to define the full extent of the contamination.

- (2) There are numerous documents from the Michigan Department of Environmental Quality referencing their stand that the ongoing remediation work may not fully work as anticipated to remediate all contamination.
- (3) The remediation system currently in place addresses contamination found outdoors only as the plume is presently defined. No off-site work has been performed to fully determine the lateral extent of contamination.
- (4) There are numerous documents from the Michigan Department of Environmental Quality referencing that Eagle Picher may have "Due Care" responsibilities with regard to indoor air.
- (5) There are numerous documents from the Michigan Department of Environmental Quality referencing that the remediation system currently in place addresses groundwater contamination only, no other soil remediation is planned.
- (6) A similar remediation system was in operation before and it did not work as anticipated.
- (7) A "worst case scenario" cost obtained in a document provided by Eagle Picher Holdings, Inc. (page KS0000691) was \$1,000,000, more than twice the amount they are proposing to set aside for the property.

Site Assessment ^A			
Additional Groundwater wells	20	\$5,000 each	\$100,000
Sampling (soil)	30 fullscan	\$1,500 each	\$45,000
Groundwater sampling	20	\$750 each	\$15,000 initial
Air sampling	10	\$1,000	\$10,000
Labor and equipment			\$100,000
Total for Site Assessment			\$270,000
Operation of current Remediation System ^B			
Total for operation of current system			\$200,000
Ongoing Sampling ^C			
Groundwater monitoring wells	40	\$750 each	\$30,000
Labor and equipment			\$7,500
Total for Ongoing Sampling			\$37,500 (per round)
Total for Ongoing Sampling (10 years)			\$375,000
Recommended Building Decontamination ^D			
Recommended			\$48,000
Contingency	20%		\$9,600
Total for recommended building decontamination			\$57,600
Contingency Money ^E			
Total contingency money			\$3,000,000

A Site assessment would include installing monitoring wells as necessary to determine full extent of the contamination plume (off-site and beneath building). Additional soil samples to determine if excavation warranted (indoor and outdoor). Indoor air samples will be collected to satisfy Due Care responsibilities. Analytical costs are based on laboratory published costs per sample per analysis. Labor and equipment costs are estimated based on current U.S. EPA contractor rates.



- B Operation of Current System. The site contact stated that \$200,000 is set aside for operation of the system for the next several years during the site inspection.
- C Assumed a total of 40 groundwater monitoring wells. 10 year cost is assumed to be 1 round per year. MDEQ may have other requirements. Analytical costs are based on laboratory published costs per sample per analysis. Labor and equipment costs are estimated based on current U.S. EPA contractor rates.
- D These costs were obtained from a document provided by Eagle Picher Holdings, Inc. (MI0003262 dated February 2006). The contingency is for two tasks not clearly defined in the document.
- E Contingency money. This money is set aside in case the current treatment system does not work as anticipated, in case additional soil remediation is necessary, to address any additional contamination found to be migrating off-site, and to address the contamination present underneath the building. It is assumed that \$3,000,000 would be adequate to cover these costs, however an accurate estimate can not be made as the entire contamination plume is not defined.





TETRA TECH EM INC.

March 24, 2006,

Mr. Jon Gulch
On-Scene Coordinator
Emergency Response Branch 1
U.S. Environmental Protection Agency
9311 Groh Road
Grosse Ile, Michigan 48138

**Subject: Site Inspection Report
Eagle Picher Ohio/Michigan/Illinois Properties
2638 Princess Street and 2424 John Daly Drive, Inkster, Wayne County, Michigan
Technical Direction Document No. S05-0603-003
Tetra Tech Contract No. 68-W-00-129**

Dear Mr. Gulch:

The Tetra Tech EM Inc (Tetra Tech) Superfund Technical Assessment and Response Team (START) is submitting the enclosed site inspection report for the Eagle Picher facility located in Inkster, Michigan. If you have questions or comments regarding the report or require additional copies, Please contact me at (440) 234-0886 or Therese Gioia at (312) 201-7431.

Sincerely,

Stephen Wolfe
Tetra Tech START Project Manager

Enclosure

cc: Lorraine Kosik, U.S. EPA START Project Officer
Therese Gioia, Tetra Tech START Program Manager

**SITE INSPECTION REPORT
EAGLE PICHER OHIO/MICHIGAN/ILLINOIS PROPERTIES
2638 PRINCESS STREET AND 2424 JOHN DALY DRIVE
INKSTER, WAYNE COUNTY, MICHIGAN**

Prepared for

U.S. ENVIRONMENTAL PROTECTION AGENCY
Region 5 Emergency Response Branch 1
9311 Groh Road
Grosse Ile, MI 48138

TDD No.:	SO5-0603-003
Date Prepared:	March 24, 2006
Contract No.:	68-W-00-129
Prepared by:	Tetra Tech EM Inc.
Tetra Tech START Project Manager:	Stephen Wolfe
Telephone No.:	(440) 234-0886
U.S. EPA On-Scene Coordinator:	Jon Gulch
Telephone No.:	(734) 692-7686



1.0 INTRODUCTION

Tetra Tech EM Inc. (TTEMI) Superfund Technical Assessment and Response Team (START) prepared this site inspection report in accordance with the requirements of Technical Direction Document (TDD) Number SO5-0603-003 issued by the U.S. Environmental Protection Agency (U.S. EPA). The scope of this TDD was to conduct site inspections at nine properties located in Ohio, Michigan, and Illinois. Specifically, START was tasked to assist the OSC in determining if Custodial Trust Funds set aside by the property debtor (Eagle Picher Holdings, Inc.) would be sufficient based on the following: review of all site files available at the time of the inspection; review of any historical reports for each site; and visual assessment/documentation of current property conditions. In addition to the visual property assessment, an X-Ray fluorescent instrument (Innov-X-Systems) was available to test soils for metal contamination.

Access for the site inspections was arranged between Catherine Garypie (Office of Regional Council, U.S. EPA, Region 5), Elise Feldman and Jason Barbeau (U.S. Department of Justice, Environmental Enforcement Section), and Patrick Brooks (legal counsel for Eagle Picher Holdings, Inc.).

Jon Gulch, Region 5 U.S. EPA On-Scene Coordinator (OSC) and Stephen Wolfe with TTEMI START performed all site inspections for the properties located in Ohio and Michigan. Doug Rommeck (Manager-Health, Safety and Environment) was the Eagle Picher representative for the Ohio and Michigan sites. Jeff Lippert (Michigan Department of Environmental Quality) was present at the site visits for the Inkster and River Rouge, Michigan locations. Ken Brown and Raquel Cramlet with TTEMI START performed the inspection at the Illinois property. Greg Stauder of Greg Stauder & Co. was the representative for Eagle Picher at the Galena, Illinois property. Due to the timing of the inspections, no U.S. EPA representative was available to attend the site inspection in Galena, Illinois.

This report specifically addresses the properties located at 2638 Princess Street and 2424 John Daly Drive, Inkster, Wayne County, Michigan. Attachments to the report include a topographic map of the site location (Attachment A), an aerial photographic of the site location (Attachment B), and select photographs collected during the site inspection (Attachment C).

2.0 INITIAL BACKGROUND INFORMATION

The following site summary was compiled by Laura Ripley (Environmental Scientist, U.S. EPA Region 5).

The site is an office and research and development complex owned by EP1 (predecessor entities of the current Eagle Picher debtors, which were themselves the subject of an earlier, separate Chapter 11 bankruptcy proceedings) that consist of approximately 5 acres of land. The site was historically used to manufacture gaskets from 1945 to 2000. The Wolverine Segment (part of the Eagle Picher corporate structure) is voluntarily addressing a release of toluene, chlorobenzene and BTEX from former storage tanks and their associated piping system under the supervision of the Michigan Department of Environmental Quality (MDEQ). EPA completed a Preliminary Assessment on the Wolverine Fab & Mfg Div Eagle-Picher site located at 2638 Princess Street (CERCLIS ID # MID005354386) in 1987. At this time, no problems were seen as a Federal Superfund Program. A Multi-system query was performed in ENVIROFACTS and there is one additional facility located at 2638 Princess Street (Wolverine Gasket). Wolverine Gasket has a RCRA Handler ID MID005354386 and a TRI Facility ID 48141WLVRN2638P.

3.0 HISTORICAL FILE REVIEW

Stephen Wolfe (TTEMI) contacted Mr. Jeff Lippert who is the MDEQ official overseeing the clean-up work at 2638 Princess Street. In a March 9, 2006 conversation, Mr. Lippert indicated that a hydrogen peroxide injection well system has been in operation at the site in order to address a release of chemicals. Mr. Lippert indicated that



there is contamination present beneath the facility. A Freedom of Information Act (FOIA) request was submitted to MDEQ for files relating to this site; however, the information requested was not received prior to the site visit.

The facility located at 2638 Princess Street had 1 document related to the generating and storage of hazardous waste available for review. A "Generator Biennial Hazardous Waste Report" for 1983 was available for the property located at 2638 Princess Street. It indicated that the following hazardous wastes were removed from the facility in the calendar year ending 1983: Waste Flammable Liquid NOS, D0001 (3,700 gallons).

MDEQ provided several documents relating to the Inkster property prior to the preparation of this report. Pertinent information relating to the release of contamination is described below.

In a letter from the Michigan Department of Natural Resources (MDNR) dated January 13, 1992 (Ed Novak, author) MDNR provided comments to the proposed Remedial Action Plan. "Figure 1 depicts the approximate location of the contaminated area. Although it was not indicated as such, it is likely that the contamination extends beneath the building structure particularly since that is where the LUST (leaking underground storage tank) was located"

Eagle Picher completed FORM EQP4482 ("Notice of Migration of Contamination") and filed it with MDEQ on June 9, 1999. Douglas Rommeck (Eagle Picher) completed the form and states "Notwithstanding the lack of evidence of down-gradient migration off of the property, one monitoring well (MW3) located southwest of the source area and immediately adjacent to the facility property boundary has shown elevated levels of toluene. Consequently, although Wolverine Gasket has no data to confirm off-site migration and the hydrogeological data suggests that migration would not be in the direction of the offsite property in the vicinity of MW-3, it is possible that contamination may have migrated off-site. Therefore, purely as a protective measure, pursuant to Section 7a of Part 201 of the Michigan Environmental Response Act, enclosed please find a Notice of Migration of Contamination with respect to this facility."

In a letter dated September 25, 2002, ARCADIS (a Wolverine Gasket contractor) replied to comments proposed by MDEQ to a Remedial Work Plan. Comment 3 reads as follows: "We have identified data gaps that will require additional investigation for complete delineation. Both the soil and groundwater impacts are not well defined in the northern, eastern, and western directions."

In a letter dated February 14, 2006 from MDEQ to Douglas Rommeck (Eagle Picher), MDEQ provides comments to a Part 201 Remedial Activities Summary submitted by Conestoga-Rovers & Associates (Eagle Picher contractor). A summary of MDEQ comments are as follows: "In summary, the treatment being used is not designed to remediate impacted soil in the Vadose zone. CRA has not asserted that oxygen from the injections will have any effect stimulating biodegradation of the contamination in the Vadose zone. If this is what they anticipate to occur, they will have to submit a plan to verify that this is occurring. Continued injections of hydrogen peroxide and Fenton's Reagent without addressing the high concentrations of contaminants in the soil will most likely not produce the desired results. Any reduction in concentrations of contaminant will likely be temporary. Additionally, the extent of impacted soil and groundwater is not defined and the groundwater flow is not fully understood. Additional soil borings and monitoring wells, including some off-site, are needed to define the extent of contamination as well as demonstrate the injections are not exacerbating the contamination. Concentrations of contaminants exceed Csat throughout the site. Of immediate concern is the presence of concentrations of volatile organic compounds above soil and groundwater volatilization to indoor air criteria under the building. Eagle Picher should review their Due Care responsibilities under 20107(a) and Part 10 of the 201 Rules."

Eagle Picher Holdings made available some site files on March 23, 2006. In reviewing these files, a March 2, 2005 document written by ARCADIS summarizing their site findings made several references that the extent of contamination could not be adequately defined based upon work to date. The recommendation made by ARCADIS was to do additional work that would further define the contamination plume outside of the building. In addition, another recommendation was made that soil samples collected inside the building indicated increasing



concentrations of chlorinated compounds with depth of soil. ARADIS recommended additional investigations to further define this environmental issue.

4.0 SITE OBSERVATIONS

A walkthrough of the facility was conducted on March 22, 2006. The two properties (2638 Princess Street and 2424 John Daly Drive) are combined as one property (the two addresses are for different addresses to the same facility). The John Daly Drive address is a sales office, whereas the Princess Street address is for the manufacturing division. Mr. Rommeck showed the room where the leaking underground storage tank (LUST) containing toluene was removed. Eagle Picher had installed monitoring wells inside the building. During the installation, another underground storage tank was found in the same room as the LUST. Mr. Rommeck stated that he cut out the concrete and opened the tank, which was full of groundwater. Previous records indicate that the tank was used to store fuel oil. Mr. Rommeck drained the tank and filled it in with sand; the concrete floor over the tank was not replaced.

The injection field, which is part of the remediation, is located in the field adjacent to the south side of the building. There is one remaining above-ground storage tank (AST) in the area. Four other ASTs were recently removed and all five had previously contained solvents. To date, there has been no groundwater monitoring wells installed on the property to the southwest of the contaminated zone.

Mr. Rommeck stated that excavation occurred in the area of the release to a depth of two feet. The area was backfilled; however, no confirmation samples were collected prior to backfilling as the purpose of the excavation was to remove the most heavily contaminated soils.

5.0 CONCLUSION

Eagle Picher Holdings, Inc., is proposing that a set aside of \$415,817 (to be spent over a period of 9 years) would be sufficient for property remediation.

Based on available information at the time of this report, the funds proposed will not adequately address the environmental conditions present on site. A cost estimate can not be generated as there are data gaps at the site. MDEQ (as stated by Jeff Lippert) is concerned that Eagle Picher is not addressing the contamination located underneath the building, which would continue to be a source point for future contamination. Mr. Rommeck has stated that their consultant anticipates the outside soils and groundwater to be remediated within the next 4-5 years. A remedial work plan has been in operation for several years using similar technology (hydrogen peroxide injection) and it did not work as anticipated. Although the new consultant has designed a "better" system, MDEQ still feels that the concept over all will not work (see quotes in Section 3.0). Furthermore, it is possible that additional USTs will be located throughout the building, as evidenced by Mr. Rommeck finding one as the groundwater monitoring wells were being installed. Further investigation is warranted as additional USTs may exist which could possibly contain solvents and become another source point for further contamination. Further work needs to be performed to completely identify and delineate the contamination plume and to address the contamination located beneath the building.

There are numerous references throughout the available documents (provided by both MDEQ and Eagle Picher Holdings) that mention that fact that further investigations are needed to adequately identify the extent-of-contamination. Assuming that the entire \$415,817 will be used to continue the soil and groundwater contamination project that is currently being conducted by Eagle Picher, it is estimated that an additional \$100,000 will be needed for additional assessment work and up to \$500,000 for a complete remediation of soils from this release. If the results of these additional assessments reveal more contamination, the cost for total site clean-up would likely increase beyond \$1 million.



**ATTACHMENT A
TOPOGRAPHIC MAP**

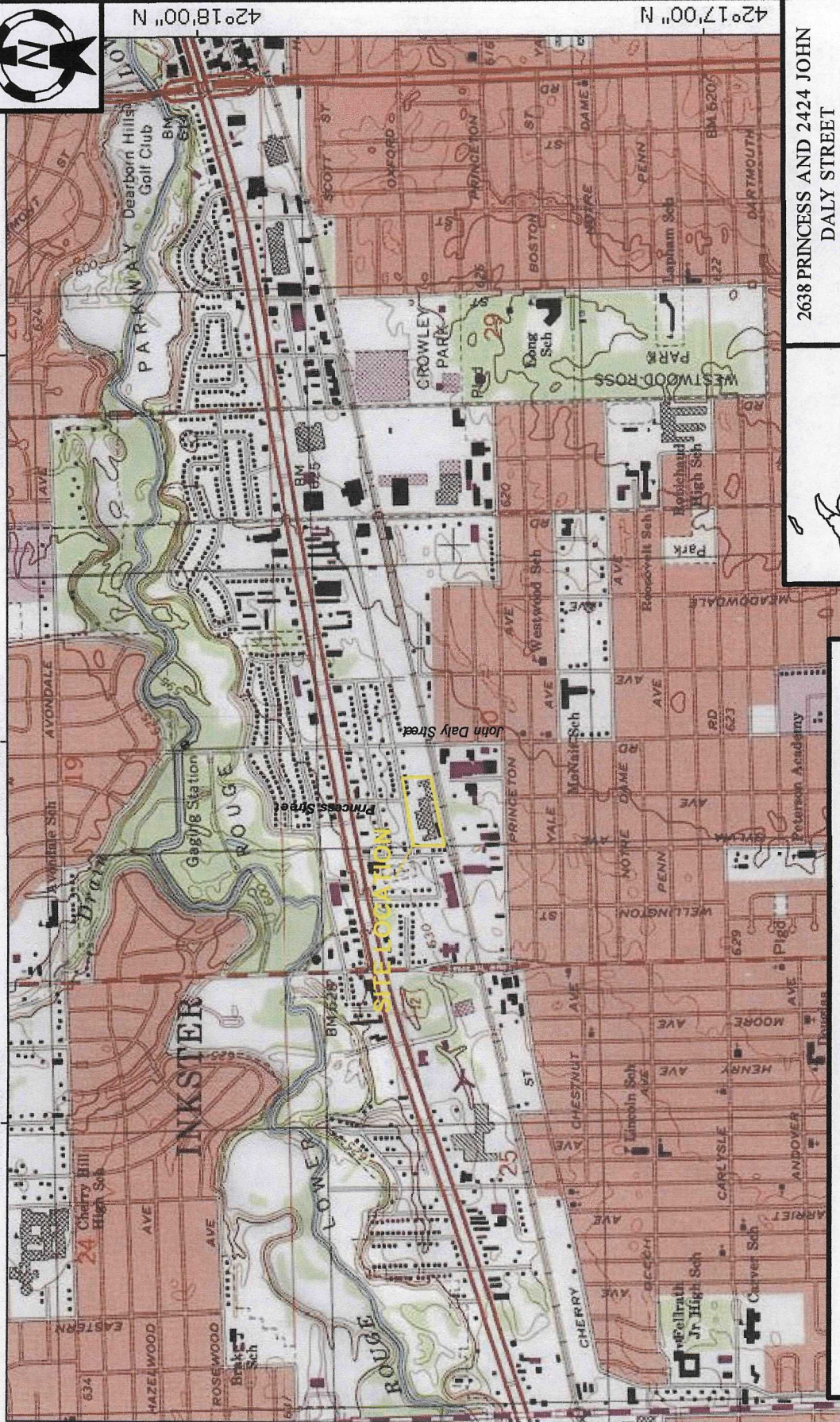




83°19'00" W

83°18'00" W

WGS84 83°17'00" W



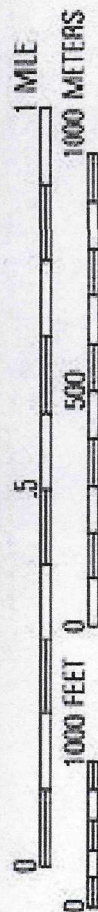
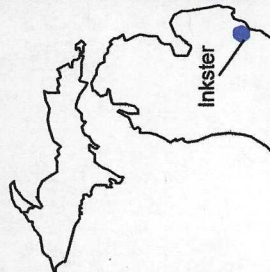
42°18'00" N

42°17'00" N

2638 PRINCESS AND 2424 JOHN
DALY STREET
INKSTER
WAYNE COUNTY, MICHIGAN
PROJECT NO.: S05-0603-003

SITE LOCATION

Tetra Tech EM Inc.



Source: TOPO!©2001 National Geographic

**ATTACHMENT B
AERIAL MAP**



TDD NO.: S05-0603-003 (Eagle Picher Ohio/Michigan/Illinois properties/Inkster location)

**ATTACHMENT C
PHOTOGRAPHIC LOG**



TDD NO.: SO5-0603-003 (Eagle Picher Ohio/Michigan/Illinois properties/Inkster location)



Photograph No. 1 **Date:** March 22, 2006
TDD No.: S05-0603-003 **Orientation:** Inside Building
Location: 2638 Princess and 2424 John Daly, Inkster, Michigan
Subject: Monitoring well. The leaking UST (Toluene) was removed from this area.



Photograph No. 2 **Date:** March 22, 2006
TDD No.: S05-0603-003 **Orientation:** Inside Building
Location: 2638 Princess and 2424 John Daly, Inkster, Michigan
Subject: Area where an UST for fuel was removed less than 1 year ago.





Photograph No. 3 **Date:** March 22, 2006
TDD No.: S05-0603-003 **Orientation:** Southwest
Location: 2638 Princess and 2424 John Daly, Inkster, Michigan
Subject: Hydrogen Peroxide injection field. Empty AST in background



Photograph No. 4 **Date:** March 22, 2006
TDD No.: S05-0603-003 **Orientation:** West
Location: 2638 Princess and 2424 John Daly, Inkster, Michigan
Subject: Hydrogen Peroxide Injection field. Eagle Picher property ends at the
 fenceline, no monitoring wells have been installed on adjacent property.





Photograph No. 5 **Date:** March 22, 2006
TDD No.: S05-0603-003 **Orientation:** West
Location: 2638 Princess and 2424 John Daly, Inkster, Michigan
Subject: Hydrogen Peroxide Injection field. Eagle Picher property ends at the
fenceline, no monitoring wells have been installed on adjacent property.



Photograph No. 6 **Date:** March 22, 2006
TDD No.: S05-0603-003 **Orientation:** Southwest
Location: 2638 Princess and 2424 John Daly, Inkster, Michigan
Subject: Hydrogen Peroxide injection field





Photograph No. 7 **Date:** March 22, 2006
TDD No.: S05-0603-003 **Orientation:** North
Location: 2638 Princess and 2424 John Daly, Inkster, Michigan
Subject: Pipe leading from ground was once a solvent feed line



Photograph No. 8 **Date:** March 22, 2006
TDD No.: S05-0603-003 **Orientation:** East
Location: 2638 Princess and 2424 John Daly, Inkster, Michigan
Subject: Pipes leading from ground behind orange post were historically used as solvent feed lines





TETRA TECH EMI INC.

MEMORANDUM

To: Jon Gulch, U.S. EPA On-Scene Coordinator, Region 5, Grosse Ile, Michigan
From: Stephen Wolfe, Tetra Tech EMI START, Cleveland, Ohio
RE: TDD S05-0603-003 Eagle Picher Michigan, Ohio, and Illinois Properties----Supplemental Cost Information Estimate—River Rouge, Michigan property.
CC: Jason Barbeau and Elise Feldman (U.S. DOJ), Catherine Garypie (U.S. EPA), site files
Date: April 7, 2006

Dear Mr. Gulch,

A site investigation report was submitted for the above referenced project. After discussions with the U.S. Department of Justice, it was determined that a more extensive estimate of project cost structure would be needed for each property. This memorandum discusses the River Rouge, Michigan property only. Please note that all costs **are estimates only**. The following estimates and recommended actions were made based on all available site information and past experience with similar projects. A full Site Assessment conducted on the property may yield additional information that would increase or decrease these estimated costs.

At the time of the initial report (March 24, 2006), limited information was available, except observations from a site visit. Subsequent to the initial report, Eagle Picher Holdings, Inc., provided additional files concerning the property in question and that data was used to prepare this Memorandum. The final costs listed below are an updated estimate based on the site visit and all information provided by Eagle Picher Holdings, Inc. to date. Receipt of any additional information may affect the final estimate.

Minimum Recommended Actions

At this time, due to the lack of information concerning site conditions, the following actions should be taken, at a minimum, at the River Rouge, Michigan property:

- (1) A full site assessment should be conducted to clearly define site conditions and any potential environmental issues.
- (2) The steel drum and personal protective equipment observed on site should be removed.
- (3) All environmental issues discovered during the site assessment will need to be addressed.

Justifications for Recommended Work

- (1) A 1989 preliminary investigation revealed "high levels of contamination" although the exact nature of the contaminants could not be defined the contamination is most likely petroleum hydrocarbons as evidenced by the analytical data. Samples were analyzed for VOCs, SVOCs and TPH. A total of 3 borings were drilled during the site assessment, this is not sufficient as borings were collected in one trench only (out of a possible 6).
- (2) The map location for the trenches is hand drawn. A geophysical survey will be able to more accurately define the entire trench area.
- (3) A "worst case scenario" cost obtained in a document provided by Eagle Picher Holdings, Inc (page KS0000691) was \$250,000 almost twice the amount they are proposing to be set aside for the property.

Site Assessment ^A			
GeoProbe	1 week	\$1,000/day	\$7,000
Multi-RAE	1 week	\$500	\$500
Soil Samples	20 (full scan)	\$1,500/each	\$30,000
Water Samples	5 (full scan)	\$750/each	\$3,750
GPR Survey			\$10,000
Labor and misc Equipment			\$17,500
Total for Site Assessment			\$68,750
Soil Removal HAZARDOUS Waste ^B			
Waste Disposal	13,000 yds ³	\$150/ yds ³	\$1,950,000
Labor and equipment			\$250,000
Backfill	13,000 yds ³	\$10/ yds ³	\$130,000
Set-up			\$10,000
Analytical costs			\$12,000
Contingency	20%		\$470,400
Total for soil removal as Hazardous waste (plus drum removal)			\$2,822,400

- A** Site assessment would include using a Geoprobe to collect samples from the property and scanning them with the Multi-RAE. The main focus should be on the suspected trench area with samples collected along the perimeter also. If groundwater is encountered, samples will be collected. Full scan analysis will be performed on all samples. Analytical costs are based on laboratory published costs per sample per analysis. Labor and equipment costs are estimated based on current U.S. EPA contractor rates.
- B** Removal work. The area for excavation is estimated to be 1 acre to a depth of 8 feet. In the preliminary report, it was concluded that the depth of the fill is 8-feet. There is no specific reference to the lateral extent of the fill area, so an assumption was made that it is 1 acre in size (1/5 of the total property size). Any additional extent of contamination will increase the final costs. Analytical costs are based on laboratory published costs per sample per analysis. Labor and equipment costs are estimated based on current U.S. EPA contractor rates.





TETRA TECH EM INC.

March 24, 2006,

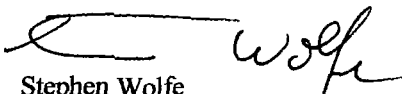
Mr. Jon Gulch
On-Scene Coordinator
Emergency Response Branch 1
U.S. Environmental Protection Agency
9311 Groh Road
Grosse Ile, Michigan 48138

**Subject: Site Inspection Report
Eagle Picher Ohio/Michigan/Illinois Properties
Adjacent to 1900 (1721) West Pleasant Ave, River Rouge, Wayne County, MI
Technical Direction Document No. S05-0603-003
Tetra Tech Contract No. 68-W-00-129**

Dear Mr. Gulch:

The Tetra Tech EM Inc (Tetra Tech) Superfund Technical Assessment and Response Team (START) is submitting the enclosed site inspection report for the Eagle Picher facility located in River Rouge, Michigan. If you have questions or comments regarding the report or require additional copies, Please contact me at (440) 234-0886 or Therese Gioia at (312) 201-7431.

Sincerely,



Stephen Wolfe
Tetra Tech START Project Manager

Enclosure

cc: Lorraine Kosik, U.S. EPA START Project Officer
Therese Gioia, Tetra Tech START Program Manager

**SITE INSPECTION REPORT
EAGLE PICHER OHIO/MICHIGAN/ILLINOIS PROPERTIES
ADJACENT TO 1900 WEST PLEASANT AVENUE
RIVER ROUGE, WAYNE COUNTY, MICHIGAN**

Prepared for

**U.S. ENVIRONMENTAL PROTECTION AGENCY
Region 5 Emergency Response Branch 1
9311 Groh Road
Grosse Ile, MI 48138**

TDD No.:	SO5-0603-003
Date Prepared:	March 24, 2006
Contract No.:	68-W-00-129
Prepared by:	Tetra Tech EM Inc.
Tetra Tech START Project Manager:	Stephen Wolfe
Telephone No.:	(440) 234-0886
U.S. EPA On-Scene Coordinator:	Jon Gulch
Telephone No.:	(734) 692-7686



TDD NO.: SO5-0603-003 (Eagle Picher Ohio/Michigan/Illinois properties/River Rouge location)

1.0 INTRODUCTION

Tetra Tech EM Inc. (TTEMI) Superfund Technical Assessment and Response Team (START) prepared this site inspection report in accordance with the requirements of Technical Direction Document (TDD) Number SO5-0603-003 issued by the U.S. Environmental Protection Agency (U.S. EPA). The scope of this TDD was to conduct site inspections at nine properties located in Ohio, Michigan, and Illinois. Specifically, START was tasked to assist the OSC in determining if Custodial Trust Funds set aside by the property debtor (Eagle Picher Holdings, Inc.) would be sufficient based on the following: review of all site files available at the time of the inspection; review of any historical reports for each site; and visual assessment/documentation of current property conditions. In addition to the visual property assessment, an X-Ray fluorescent instrument (Innov-X-Systems) was available to test soils for metal contamination at the Ohio and Michigan sites only.

Access for the site inspections was arranged between Catherine Garypie (Office of Regional Council, U.S. EPA, Region 5), Elise Feldman and Jason Barbeau (U.S. Department of Justice, Environmental Enforcement Section), and Patrick Brooks (legal counsel for Eagle Picher Holdings, Inc.).

Jon Gulch, Region 5 U.S. EPA On-Scene Coordinator (OSC) and Stephen Wolfe with TTEMI START performed all site inspections for the properties located in Ohio and Michigan. Doug Rommeck (Manager-Health, Safety and Environment) was the Eagle Picher representative for the Ohio and Michigan sites. Jeff Lippert (Michigan Department of Environmental Quality) was present at the site visits for the Inkster and River Rouge, Michigan locations. Ken Brown and Raquel Cramlet with TTEMI START performed the inspection at the Illinois property. Greg Stauder of Greg Stauder & Co. was the representative for Eagle Picher at the Galena, Illinois property. Due to the timing of the inspections, no U.S. EPA representative was available to attend the site inspection in Galena, Illinois.

This report specifically addresses the property located adjacent to 1900 West Pleasant Avenue, River Rouge, Wayne County, Michigan (parcel number 50-008-99-0007-701). Attachments to the report include a topographic map of the site location (Attachment A), an aerial photograph of the site location (Attachment B), and select photographs collected during the site inspection (Attachment C).

2.0 INITIAL BACKGROUND INFORMATION

The following site summary was compiled by Laura Ripley (Environmental Scientist, U.S. EPA Region 5).

The site consists of approximately 5 undeveloped and wooded acres zoned commercial/industrial. The site and adjacent property were previously of EPI's (predecessor entities of the current Eagle Picher Debtors, which were themselves the subject of an earlier, separate Chapter 11 proceedings) Fabiricon Automotive and Fabiricon Products Division. The Fabiricon Automotive Property, which manufactured cotton shoddy insulation for automotive applications, was shutdown and sold in 1994. The Fabiricon Products Division, which manufactured packaging for food products, was sold in 1998.

Eagle Picher retained the portion of this site where "cotton shoddy" generated by its automotive operations was historically disposed of in the mid-1950s. A preliminary site characterization performed in 1989 that included a perched water sampling and soil sampling from the trench did not identify the presence of contaminants except for low levels of TPH in the soil.

A search was performed on the U.S. EPA's CERCLIS database and U.S. EPA's Superfund program has not had any involvement with this site; however, without a specific address this could not be confirmed. A multi-system query was conducted in ENVIROFACTS and there are 2 Fabiricon facilities located in River Rouge; Fabiricon Automotive Products Company located at 1900 West Pleasant Avenue (RCRA Handler ID MID082761966 and a TRI Facility ID 48218WLVN1900W), and Fabiricon Products, Inc. located at 1721 West Pleasant Avenue (RCRA Handler ID MID086147980).



3.0 HISTORICAL FILE REVIEW

The facility located at 1721 West Pleasant Avenue had 2 documents related to the generating and storage of hazardous waste available for review. In 1980, one indicated that the following hazardous wastes were generated/stored at the facility: F005 (non-halogenated solvents) and U159 (2-butanone). A document dated January 4, 1983 from the Michigan Department of Natural Resources indicated that the facility is now a small quantity generator and is no longer regulated. The facility was a small production printing shop that used water based and solvent based inks. Small quantities of a wash solvent (mixture of ethyl and normal alcohol and MEK) were generated.

A "Generator Biennial Hazardous Waste Report" for 1983 was available for the property located at 1900 West Pleasant Avenue. It indicated that the following hazardous wastes were removed from the facility in the calendar year ending 1983: Flammable Solid NOS (1,200 pounds); Corrosive Solid NOS (31,673 pounds); and Flammable Liquid NOS (7,300 gallons).

Eagle Picher Holdings, Inc. made available a Preliminary Site Investigation Report that was prepared by Testing Engineers and Consultants, Inc. in October, 1989. The conclusion to the report is presented below:

"The Ground Penetrating Radar Survey indicated a maximum depth of the trenches of about 8 to 10 feet. This was confirmed with the placement of Boring #2 and #3 which penetrated through the trench into clay at 8.0 feet. Moderately high levels of contamination were located within the trench, with the highest levels just above the clay. Analytical testing could not confirm the exact chemical constituents of the trenches and they can only be defined as Total Petroleum Hydrocarbons. It appears that the thick clay formation has prevented the migration of the contaminants to the groundwater table, although some migration of contaminants off-site along the railroad tracks is possible and has not been determined.

As a result of this preliminary site characterization, it is recommended by Testing Engineers & Consultants, Inc. that further work be performed to define the lateral and vertical extent of contamination throughout the site. This would include more borings combined with analytical testing. Although, the exact compounds could not be identified within the one examined trench, it cannot be assumed that all of the trenches will contain the same levels or types of contaminants due to the different ages of the trenches."

4.0 SITE OBSERVATIONS

The walkthrough for this property was conducted on March 22, 2006. The property is approximately 5 wooded acres. A parking lot for the adjacent Fabiricon manufacturing plant borders the property to the north and east; railroad tracks border the property to the west.

There were no visible signs of contamination present; however miscellaneous materials (bricks, shingles, car hood, etc.) have been dumped on the property. One steel drum was located on site; however it was rusted through and empty. The XRF unit was used to test for metal contamination in the soils and there were no results exceeding any regulatory standards.

5.0 CONCLUSION

Eagle Picher Holdings, Inc., is proposing that a set aside of \$137,188 over a period of 2 years would be sufficient for property remediation.

Based on all information available at the time of this report, it appears that the dollar amount proposed by Eagle Picher for the River Rouge property would be sufficient; provided that further site investigations do not uncover any additional contamination. At this time, there is no available information that would indicate that follow-up



investigations were performed on the property, therefore, U.S. EPA would recommend that additional site investigations be performed U.S. EPA cannot rule out the possibility that there is contamination present on this property.



**ATTACHMENT A
TOPOGRAPHIC MAP**



TDD NO.: SOS-0603-003 (Eagle Picher Ohio/Michigan/Illinois properties/River Rouge location)



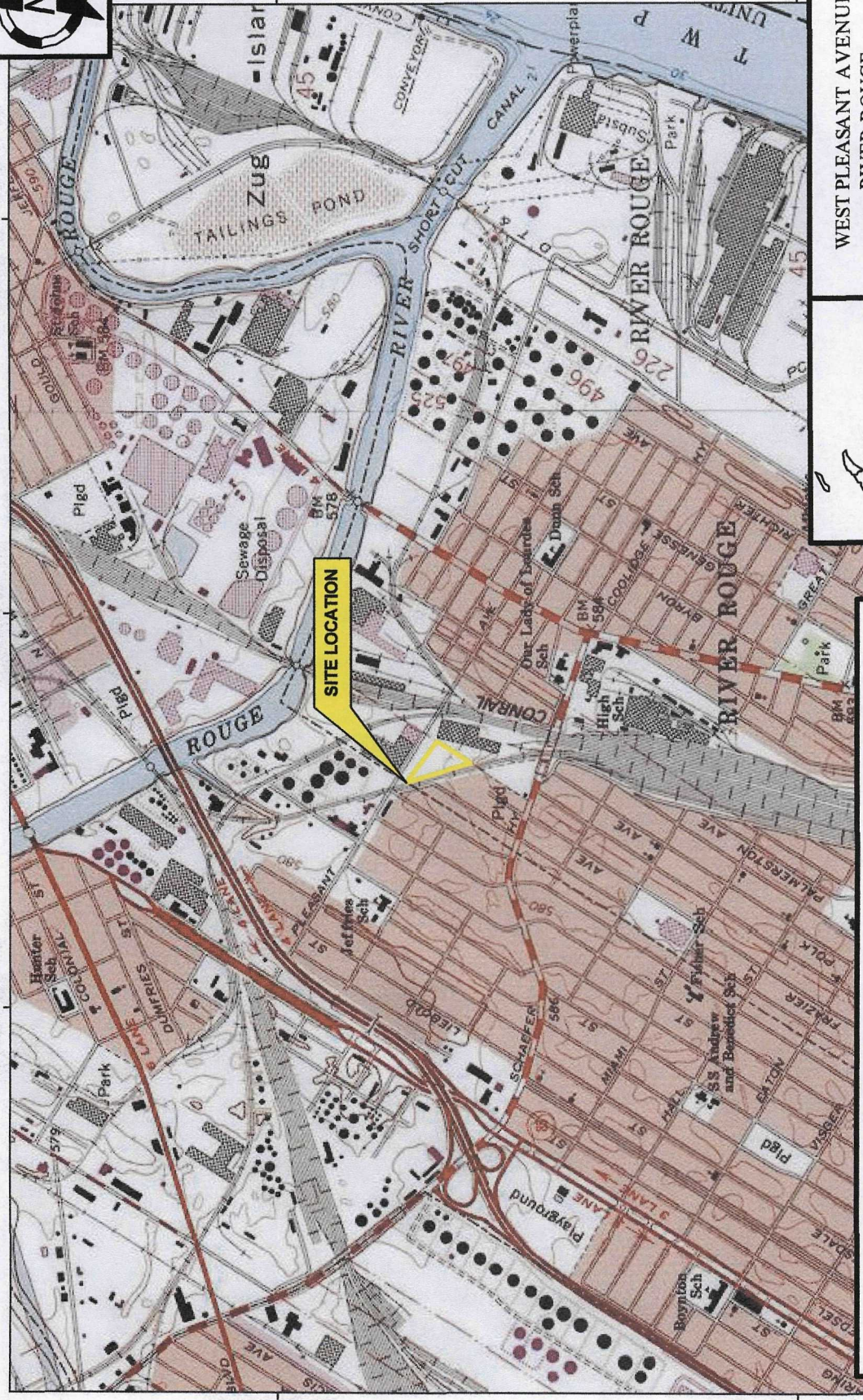
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83°08'00" W

83°09'00" W

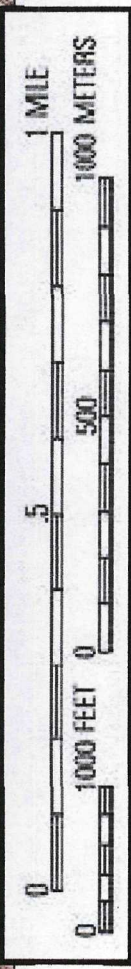
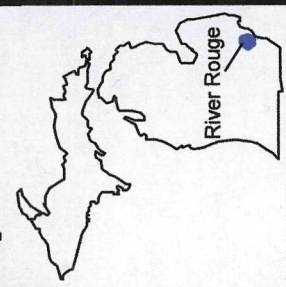
42°17'00" N

42°16'00" N



WEST PLEASANT AVENUE
RIVER ROUGE
WAYNE COUNTY, MICHIGAN
PROJECT NO.: S05-0603-003

SITE LOCATION



Source: TOPO!®©2001 National Geographic

ATTACHMENT B
AERIAL MAP



TDD NO.: SO5-0603-003 (Eagle Picher Ohio/Michigan/Illinois properties/River Rouge location)



AERIAL MAP



SOURCE: MODIFIED FROM U.S. GEOLOGICAL SURVEY 7.5-MINUTE SERIES MAP, QUARTER
QUADRANGLE IN, DELAWARE, OHIO

**ATTACHMENT C
PHOTOGRAPHIC LOG**



TDD NO.: SO5-0603-003 (Eagle Picher Ohio/Michigan/Illinois properties/River Rouge location)



Photograph No. 1 **Date:** March 22, 2006
TDD No.: S05-0603-003 **Orientation:** Southwest
Location: River Rouge, Michigan
Subject: Typical property view



Photograph No. 2 **Date:** March 22, 2006
TDD No.: S05-0603-003 **Orientation:** West
Location: River Rouge, Michigan
Subject: Signs of dumping on the property (trash)





Photograph No. 3 **Date:** March 22, 2006
TDD No.: S05-0603-003 **Orientation:** West
Location: River Rouge, Michigan
Subject: Drum (empty) located on the property



Photograph No. 4 **Date:** March 22, 2006
TDD No.: S05-0603-003 **Orientation:** Down
Location: River Rouge, Michigan
Subject: Signs of dumping

